European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 25 6212

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 2001/016219 A1 (ASKMAN LARS ET AL) 23 August 2001 (2001-08-23) * example * ---	1-14	A23L1/24 A23L1/22 A23D7/005
X	EP 0 533 959 A (FRISCO FINDUS AG) 31 March 1993 (1993-03-31) * example * ---	1-14	
X	US 6 586 033 B1 (BAUER ROLAND ET AL) 1 July 2003 (2003-07-01) * column 3, line 48 - line 55 * * column 5, line 49 - line 63 * * examples * ---	1-14	
X	EP 0 955 246 A (NESTLE SA) 10 November 1999 (1999-11-10) * column 3 - column 4 * ---	1-14	
X	US 6 524 636 B1 (CLEMENTS ROBERT G ET AL) 25 February 2003 (2003-02-25) * column 1, line 8 - line 18 * * column 6, line 10 - line 65 * * claims; table 1 * ---	1-14	TECHNICAL FIELDS SEARCHED (Int.Cl.7) A23L A23D
X	US 6 488 973 B1 (WRIGHT LEAH KAY) 3 December 2002 (2002-12-03) * column 1, line 50 - column 2, line 13 * ---	1-14	
Y	US 5 008 124 A (WILSON MILDRED N) 16 April 1991 (1991-04-16) * the whole document * ---	1-13	
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	12 February 2004	Smeets, D

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
O : non-written disclosure
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T : theory or principle underlying the invention
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L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 25 6212

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	12 February 2004	Smeets, D

CATEGORY OF CITED DOCUMENTS

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EPO FORM 1503 03.82 (P04C01)

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(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number : **0 533 959 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication of patent specification : **08.06.94 Bulletin 94/23**

(51) Int. Cl.^{5} : **A23L 1/31**

(21) Application number : **91110859.5**

(22) Date of filing : **01.07.91**

(54) **Cooked and frozen meat meal.**

(43) Date of publication of application : **31.03.93 Bulletin 93/13**

(46) Publication of the grant of the patent : **08.06.94 Bulletin 94/23**

(84) Designated Contracting States : **AT BE CH DE DK ES FR GB GR IT LI LU NL SE**

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EP 0 533 959 B1

Description

The present invention relates to a frozen meal, more particularly to a process for preparing a frozen meal containing meat pieces and one or more vegetables.

In the preparation of frozen meals for the food service industry such as aircraft meals containing meat with, for instance, potatoes and vegetables, pieces of meat are mixed with a cooked sauce, pressed in a standard former into a block, and then frozen and packed with the potatoes and vegetables in alu-trays. The product is normally heated in a convection oven for serving in a tray. The addition of thickeners to meat is described in US-A 3681094 and in Patent Abstracts of Japan - vol. 11, no. 69 (C-407)(2516) 3 March 1987 : vol. 15, no. 211(C-836)(4739) 29 May 1991 and vol.13, no. 362 (C-625)(3719) 14 August 1989.

We have found that if the meat pieces are mixed with a sauce and a thickener before pressing in the former, the cooked dish for serving has an attractive appearance whereby the meat pieces in the fluid sauce spread out in the tray.

Accordingly, the present invention provides a process for preparing a frozen meal which comprises cooking pieces of meat, cooling to at least a chilled temperature, adding a thickening agent in gelled form, mixing, forming into a block, freezing and finally packing with one or more frozen vegetables.

The pieces of meat are conveniently dice, chunks, slices, cubes or segments, for instance, of a size normally used in stews or ragout. The pieces of meat may be obtained by dicing meat preferably tempered to a freezing temperature e.g. -1°C to -3°C.

Any kind of meat is suitable in the process, for example, beef, pork, calf, lamb, veal, reindeer or chicken.

Before cooking, the meat pieces are advantageously marinated, for instance, with starch, salt or spices. The marination may be carried out by conventional processes such as vacuum tumbling, soaking or injection. After marination the marinated meat pieces may be browned for instance at about 180° to 220°C for a period of from 1 to 3 minutes advantageously in a square belt oven where the meat pieces are conveyed between two teflon belts through the cooking section.

The meat pieces are then cooked by any conventional method, for example, by adding about 20% water and cooking for from 1 to 2 1/2 hours, more usually from 1 1/2 to 2 hours in the bouillon in a steam cabinet.

After cooking, the meat pieces in the bouillon are cooled conveniently to a temperature from 35° to 45°C, preferably 38° to 42°C.

The thickening agent may be a gelling agent that breaks down during freezing and reheating for consumption such as a gum or a starch e.g. gum arabic or gelatin.

Before adding the thickening agent, the meat pieces are preferably separated from the bouillon and the meat pieces may be either chilled or frozen. The bouillon is then used in a sauce e.g. a creamy sauce, to which the thickening agent is added. The amount of bouillon used in the sauce may conveniently be from 10 to 30% by weight. The thickening agent is preferably dissolved or suspended in water at a concentration of from 20 to 30 % by weight and added to the sauce at a temperature from 60° to 80°C. The amount of thickening agent is advantageously from 2 to 4% by weight based on the weight of the sauce. The sauce is conveniently prepared and heated to a temperature from 90°C to 95°C and cooked for a period of about 4 to 6 minutes and then cooled, preferably to a temperature from 8°C to 15°C. The cooling of the sauce may be carried out for instance in a scraped surface heat exchanger or in a kettle.

After cooling, the sauce containing the thickener is allowed to stand to allow the gel to set e.g. from 15 to 18 hours at a temperature from 6° to 15°C.

The mixing of the chilled or frozen meat with the cooled sauce containing the thickening agent may be carried out in a meat mixer with gentle mixing for a short time e.g. from 1 to 3 minutes.

When the sauce is cooled in a scraped surface heat exchanger, the gel strength is reduced and it is preferably mixed with frozen meat whereas when the sauce is cooled in a kettle the gel strength is not reduced and it may be mixed with chilled meat e.g. at a temperature from 1°C to 4°C. The use of chilled meat rather than frozen meat is less costly and less water is lost during the chilling process compared with freezing.

After mixing, the meat pieces may be formed in a former to blocks of a standard size before freezing and packing with vegetables such as frozen cooked potatoes, cabbage, carrots, peas, beans, sprouts, brocolli etc.

The following Example further illustrates the present invention.

Example

Beef was tempered to -2°C and diced to pieces having dimensions of 15 x 20 x 28 mm. The diced pieces were then marinated in starch, salt and spices by vacuum tumbling for 10 minutes at 5°C and then browned in a square belt oven for 2 minutes at 200°C. The browned diced meat was then cooked in a bouillon in a steam cabinet. After cooking the meat was cooled to 40°C and the bouillon separated from the meat. The diced meat pieces were chilled to + 2°C while the bouillon was used in an amount of 20% as an ingredient in a sauce to which 3% by weight of gelatin was added at 75°C. The gelatin was added sol-

ubilised in warm water at 60°C at a concentration of 25 g/100 g water.

After cooking the sauce was cooled and then allowed to stand for 16 hours at 8°C to allow the gel to set. The chilled or frozen meat and garnish were then mixed with the sauce for 1.5 minutes and then formed in a standard forming equipment and frozen into blocks having dimensions of 60 x 70 x 35 mm. The blocks were then packed with e.g. frozen, cooked potatoes and vegetables into trays.

When reheated for consumption in a convection oven, the dish has an attractive appearance whereby the meat pieces in a fluid sauce spread out in the tray.

Claims

1. A process for preparing a frozen meal which comprises cooking pieces of meat, cooling to at least a chilled temperature, adding a thickening agent in gelled form, mixing, forming into a block, freezing and finally packing with one or more frozen vegetables.

2. A process according to claim 1 wherein the meat pieces are marinated before cooking.

3. A process according to claim 1 wherein the meat pieces are browned before cooking.

4. A process according to claim 1 wherein the meat pieces are cooked in a bouillon in a steam cabinet.

5. A process according to claim 4 wherein the cooked meat pieces are cooled to a temperature from 35° to 45°C.

6. A process according to claim 1 wherein the thickening agent is gelatin.

7. A process according to claim 5 wherein, before adding the thickening agent, the meat pieces are separated from the bouillon and the meat pieces are chilled or frozen.

8. A process according to claim 7 wherein the bouillon is used in a sauce to which the thickening agent has been added.

9. A process according to claim 8 wherein the thickening agent is added to the sauce as an aqueous solution or suspension at a temperature from 60° to 80°C.

10. A process according to claim 8 wherein the amount of thickening agent added to the sauce is from 2 to 4% by weight based on the weight of the sauce.

11. A process according to claim 8 wherein after cooking the sauce is cooled in a heat exchanger or a kettle.

12. A process according to claim 11 wherein after cooling, the sauce containing the thickener is allowed to stand to allow the gel to set.

13. A process according to claim 1 wherein the mixing is carried out in a meat mixer.

14. A process according to claim 13 wherein chilled meat pieces are mixed with a sauce which has been cooled in a kettle.

Patentansprüche

1. Verfahren zur Herstellung eines tiefgekühlten Gerichts, welches Verfahren das Kochen oder Dämpfen von Fleischstücken, das Abkühlen bis auf wenigstens eine kühle Temperatur, das Hinzufügen eines Verdickungsmittels in gelierter Form, das Vermengen, das Formen zu einem Block, das Tiefkühlen und zuletzt das Verpacken mit einem oder mehreren tiefgekühlten Gemüsen umfaßt.

2. Verfahren nach Anspruch 1, in welchem die Fleischstücke vor dem Kochen oder Dämpfen mariniert werden.

3. Verfahren nach Anspruch 1, in welchem die Fleischstücke vor dem Kochen oder Dämpfen gebräunt werden.

4. Verfahren nach Anspruch 1, in welchem die Fleischstücke in einer Bouillon in einem Dampfschrank gedämpft werden.

5. Verfahren nach Anspruch 4, in welchem die gekochten oder gedämpften Fleischstücke bis auf eine Temperatur von 35 bis 45 °C abgekühlt werden.

6. Verfahren nach Anspruch 1, in welchem das Verdickungsmittel Gelatine ist.

7. Verfahren nach Anspruch 5, in welchem die Fleischstücke vor dem Hinzufügen des Verdickungsmittels von der Bouillon getrennt und die Fleischstücke gefrostet oder gefroren werden.

8. Verfahren nach Anspruch 7, in welchem die Bouillon in einer Soße verwendet wird, der das

Verdickungsmittel hinzugefügt worden ist.

9. Verfahren nach Anspruch 8, in welchem das Verdickungsmittel als eine wässrige Lösung oder Suspension mit einer Temperatur von 60 bis 80 °C der Soße hinzugefügt wird.

10. Verfahren nach Anspruch 8, in welchem die Menge des der Soße hinzugefügten Verdickungsmittels 2 bis 4 Gew.% bezogen auf das Gewicht der Soße beträgt.

11. Verfahren nach Anspruch 8, in welchem die Soße nach dem Kochen in einem Wärmetauscher oder Kessel abgekühlt wird.

12. Verfahren nach Anspruch 11, in welchem die das Verdickungsmittel enthaltende Soße nach dem Abkühlen stehengelassen wird, so daß das Gel erstarren kann.

13. Verfahren nach Anspruch 1, in welchem das Vermengen in einem Fleisch-Mischgerät durchgeführt wird.

14. Verfahren nach Anspruch 13, in welchem gefrostete Fleischstücke mit einer Soße, die in einem Kessel abgekühlt wurde, vermengt werden.

Revendications

1. Procédé de préparation d'un plat congelé, qui comprend la cuisson de morceaux de viande, le refroidissement à une température au moins égale à une température de réfrigération, l'addition d'un agent épaississant sous forme gélifiée, le mélange, le façonnage en un bloc, la congélation et, finalement, le conditionnement avec un ou plusieurs légumes congelés.

2. Procédé suivant la revendication 1, dans lequel les morceaux de viande sont marinés avant cuisson.

3. Procédé suivant la revendication 1, dans lequel les morceaux de viande sont rissolés avant cuisson.

4. Procédé suivant la revendication 1, dans lequel les morceaux de viande sont cuits dans un bouillon dans une enceinte de cuisson à la vapeur d'eau.

5. Procédé suivant la revendication 4, dans lequel les morceaux de viande cuits sont refroidis à une température de 35° à 45°C.

6. Procédé suivant la revendication 1, dans lequel l'agent épaississant est la gélatine.

7. Procédé suivant la revendication 5, dans lequel, avant addition de l'agent épaississant, les morceaux de viande sont séparés du bouillon et les morceaux de viande sont réfrigérés ou congelés.

8. Procédé suivant la revendication 7, dans lequel le bouillon est utilisé dans une sauce à laquelle a été ajouté l'agent épaississant.

9. Procédé suivant la revendication 8, dans lequel l'agent épaississant est ajouté à la sauce sous forme d'une solution ou suspension aqueuse à une température de 60° à 80°C.

10. Procédé suivant la revendication 8, dans lequel la quantité d'agent épaississant ajoutée à la sauce va de 2 à 4 % en poids, sur la base du poids de la sauce.

11. Procédé suivant la revendication 8, dans lequel, après cuisson, la sauce est refroidie dans un échangeur de chaleur ou un chaudron.

12. Procédé suivant la revendication 11, dans lequel, après refroidissement, la sauce contenant l'agent épaississant est laissée au repos pour permettre la prise du gel.

13. Procédé suivant la revendication 1, dans lequel le mélange est effectué dans un mélangeur à viande.

14. Procédé suivant la revendication 13, dans lequel les morceaux de viande réfrigérés sont mélangés à une sauce qui a été refroidie dans un chaudron.

(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 558 832 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
17.06.1998 Bulletin 1998/25

(51) Int. Cl.[6]: **A23L 1/24**, A23L 1/308, A23L 1/0522, A23L 1/0534

(21) Application number: **92203669.4**

(22) Date of filing: **27.11.1992**

(54) **Dressings with reduced fat content**

Salatsosse mit niedrigem Fettgehalt

Sauce de salade à faible teneur en graisse

(84) Designated Contracting States:
AT BE CH DE DK ES FR GB GR IE IT LI NL PT SE

(30) Priority: **27.11.1991 US 799583**

(43) Date of publication of application:
08.09.1993 Bulletin 1993/36

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  BE CH DE DK ES FR GR IT LI NL PT SE AT
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EP 0 558 832 B1

Description

Description for the following Contracting States : AT, BE, CH, DE, DK, ES, GB, GR, LI, NL, SE

This invention relates to a unique combination of ingredients and a process for the preparation of low fat/no fat, reduced calorie salad dressings which mimic the functional properties of higher dressings fat.

The Related Art

Recent trends in the field of salad dressings have been directed to the development of reduced fat or substantially fat-free products which possess a smooth and creamy mouthfeel, as well as a texture and lubricity which approach the texture and mouthfeel of edible fat containing food products. Substantial work has been carried out with bulking agents such as powdered and microcrystalline cellulose in fat-containing and reduced fat food products. U.S. 5,011,701 and patents cited therein relate to the preparation, or use of various types of cellulose in various food products. Such cellulose materials have been used or proposed for reduced fat or substantially fat-free food products. However, as the fat content is reduced in food products containing substantial levels of cellulose products such as microcrystalline cellulose, adverse organoleptic effects such as undesirable mouthcoating or drying sensations, and a lack of a well-rounded organoleptic sensation corresponding to that provided by conventional fat-containing food products such as viscous and pourable dressings, tend to become more pronounced.

Microcrystalline cellulose has been used in low and reduced calorie food formulations as both a carbohydrate thickening agent and as a fat replacer, with powdered products of relatively large particle size (e.g., 15-90 micrometer length) utilized for carbohydrate reduction and colloidal grades of submicron size being used to reduce fat, generally with the adverse result mentioned above.

U.S. 5,011,701 deals with this problem by a series of at least two high shear operations to insure the long term dispersibility of the microcrystalline cellulose. This is a relatively energy intensive process requiring substantial time and energy to accomplish. U.S. 5,087,471 related to this case further specifies processing steps.

In addition to microcrystalline cellulose, other ingredients have been employed in combination in attempts to produce low fat or no fat dressings. Starch, for example, when used alone may produce a gummy, pasty, chalky dressing with the tendency to block flavor. Further, a dressing using only starch will not have satisfactory pourability.

Heretofore, preparation of a low fat/no fat salad dressing prepared with microcrystalline cellulose yet having excellent fat functional mimetic properties while using relatively low energy processes has not been completely satisfactory.

Accordingly, it is an object of the invention to overcome one or more of the disadvantages of the art with the accompanying benefit of producing low fat/no fat, reduced calorie salad dressings with the taste and functionality of full fat salad dressings.

SUMMARY OF THE INVENTION

It has now been discovered that salad dressing can be produced with less thermal and mechanical energy than expected, yet a no/low fat salad dressing containing microcrystalline cellulose and starch as well as the other ingredients of this invention can be prepared. The invention focuses on the formulation and processing of a no/low fat (0-30%) salad dressing by employing a unique fat mimetic combination of starch, preferably cold water swelling starch, colloidal microcrystalline cellulose, xanthan gum and optionally algin derivatives and optionally opacifiers to produce the desired product. Titanium dioxide is the preferred opacifier and is added to improve the overall appearance of the dressing by making it more opaque and less translucent. The formulation substantially mimics the functional properties of fat. In addition, it has been discovered that two unique methods of addition of the ingredients, in the processing of this invention to produce salad dressings with the desired functionality, are critical.

According to the invention described more fully below, there is provided a fat mimetic composition which is used to provide an optionally low calorie, dispersed, reduced or low fat salad dressing. The fat mimetic composition can frequently be used in other food materials where the organoleptic properties of fat are desirable. This dressing has a substantial functional and organoleptic resemblance to other dressings having a higher fat content.

The fat mimetic composition comprises a unique combination of an intimate dry mixture of:

1. 30% to 70% colloidal microcrystalline cellulose;

2. 30% to 70% starch, preferably a cold water swelling starch;

3. 1% to 15% gum selected from the group consisting of xanthan gum, carrageenan gum, locust bean gum, guar and the like provided there is sufficient gum to protect the microcrystalline cellulose from flocculation and the like.

4. 0% to 5% alginate derivatives selected from the group consisting of propylene glycol alginate, sodium alginate and the like;

5. 0% to 10%, preferably 0% to 5% opacifier selected from the group consisting of TiO_2, milk solids and the like provided an opacifier is desirable.

The fat mimetic composition does not comprise egg white.

70 to 99% water sufficient to form a stable essentially dispersed fat mimetic system is then employed if desirable.

This composition, when formulated in a dressing containing no fat or very low fat up to about 30% gives an organoleptic result which is essentially similar to dressings containing higher amounts of fat. The amount of mimetic employed is about 1% to 10% dry solids on a final formula dressing basis.

The unique no fat or low fat dressing has the following composition:

0.1%-10% colloidal microcrystalline cellulose; 0.1%-3% for pourable dressing and higher amounts say 0.1 to 5% for gelled consistency;
0.5%-4.5% starch, preferably a cold water swelling starch;
0.1%-0.6% of gum selected from the group consisting of xanthan gum, carrageenan gum, locust bean gum, guar gum, and the like;
0%-0.3% of alginates or alginate derivatives preferably propylene glycol alginate;
0%-1.0%, preferably 0%-0.4% opacifier selected from TiO_2, milk solids and the like;
0.1%-25% flavor cocktail consisting essentially of spice extractives, natural or artificial flavors, relishes, vegetable particulates and the like;
3%-20% acidulant selected from distilled vinegar, cider vinegar, phosphoric acid, organic acids and the like;
0%-30% sweetening agent selected from the group consisting of synthetic sweeteners, high fructose corn syrup, corn syrup, sugar (saccharose), other maltodextrins and the like;
15%-80% water;
0%-30% and preferably 0% to about 15% oil selected from the group consisting of soybean oil, canola oil, olive oil, cottonseed oil, and their partially hydrogenated derivatives and the like;

wherein the dressing does not comprise egg white.

For the purpose of this invention sweeteners such as corn syrups and maltodextrins are not considered as starch materials. The term carbohydrates, however, includes inter alia starches, corn syrups and other maltodextrins.

In addition, two unique methods of preparation are described herein.

In the first case, the microcrystalline cellulose is slurried under agitation in an appropriate amount of water, the xanthan gum is then added to form a thickened slurry.

The next steps involve sequential addition under continued agitation of:

a) sweeteners
b) acids and flavors; and
c) salt

The opacifier is then added to the admixtures. The dry blend of (cold water swelling) starch is added next, then the alginate and preservatives. Oil, if any, is added last. Agitation is continued throughout. After the ingredients are all added, the admixture is emulsified and bottled.

In the second case, a dry blend is prepared of the microcrystalline cellulose, the xanthan gum, the (cold water swelling) starch, the alginate and the opacifier. This dry blend is then slurried with agitation in an appropriate amount of water. With continuing agitation, the compensating ingredients are added, i.e., the additional xanthan gum and the alginate, if any, the sweeteners are then added together with the acid, flavors and salt. The preservatives such as sodium benzoate, potassium sorbate and EDTA may be added and again the oil is added last. Agitation is continued throughout to maintain the admixture. The admixture is finally emulsified and then bottled.

DETAILED DESCRIPTION OF THE INVENTION

Generally, the fat mimetic composition will contain five ingredients which when further formulated with appropriate components, produce substantially the organoleptic effect of other dressings having more fat. The ingredients on a dry basis are:

a) colloidal microcrystalline cellulose 30% to 70% and preferably 50% to 60%

b) starch, preferably a cold water swelling starch 30% to 70%, preferably 40% to 50%;

c) gum, preferably xanthan gum 1% to 15%, preferably 3% to 6%;

d) optionally alginate 0% to 5% and preferably when present propylene glycol alginate 1% to 3%,

e) the opacifier is also optional and when present, is present at an amount of about 0 to 10 %, more preferred 0 to 5%, most preferably 0.5% to 4%.

This fat mimetic composition may be used to advantage with the general dressing formulations described below.

Generally, the low or no fat salad dressings of the invention contain from about 0.1 to 5 %, more preferred 0.25 to about 4 weight percent of dispersed particulate, microcrystalline cellulose, from about 50 to about 99 weight percent of water, from about 1 to about 35 weight percent digestible carbohydrates (including the starches and the sweeteners), from about 0 to about 10 weight percent protein, and less than about 7 weight percent of digestible triglycerides , preferably 0 to 3%.

The microcrystalline cellulose of the invention may be any microcrystalline cellulose prepared in known manner such as for example Avicel(R) which is a registered trademark of FMC Corporation. The preparation and use of this type of microcrystalline cellulose is described in Bulletin G-34 on Avicel produced by FMC.

Avicel CL-611 is a particularly preferred microcrystalline cellulose because of its colloidal properties. This material is a colloidal grade prepared by co-processing with carboxymethyl cellulose and sodium carboxymethyl cellulose. When used herein, microcrystalline cellulose preferably means such a co-processed cellulose 70% of the material has a particle size of less than 0.2 microns.

Selected hydrocolloids may be used to advantage, for example, xanthan gum. Although xanthan gum is commonly used at lower levels to protect microcrystalline cellulose as described in the FMC Brochure mentioned above, applicants employ a substantially higher proportion to obtain the beneficial properties of the gum. Suspension, fat mimetic properties and the like are improved by higher usage.

The most effective gum is xanthan gum. For example, an aqueous microcrystalline cellulose dispersion having a 2% to 10% microcrystalline cellulose solids content may be mixed in a low shear mixer, such as a Hobart mixer with an amount of gum equal to 5% to 20% of the weight of the cellulose dispersion.

By "xanthan gum" is meant the heteropolysaccharide produced by fermentation of the microorganism of the genus Xanthomonas. A discussion of the physical and chemical properties may be found in Industrial Gums, R.L. Whistler, Ed., Academic Press, N.Y. (1973). Locust bean, guar, etc., may also be used.

Carrageenans may also be used. They are structural polysaccharides of red sea plants such as Chondus crispus and Gigartina stellata. There are several varieties of carrageenans which may be extracted from red sea plants for food use, including kappa, lambda and iota carrageenans. Carrageenans are strongly charged anionic polyelectrolytes of high molecular weight and regular configuration which have anionic sulfate ester groups regularly disposed along a polysaccharide backbone. Lambda carrageenan has a general linear structure having substantially three pendant sulfate groups for each two monosaccharide groups along the polymer backbone.

Kappa carrageenan and iota carrageenan have significantly less ester sulfate than lambda carrageenan, with iota carrageenan having approximately one sulfate group per monosaccharide group, and kappa carrageenan having approximately one sulfate group for each two monosaccharide groups along the backbone. A discussion of the physical and chemical properties of lambda carrageenan may be found in Industrial Gums mentioned above.

Addition of gum at some stage in the process to the microcrystalline cellulose dispersion has several purposes. Coating the particulate cellulose with gum has the qualities of improving mouthfeel, improving texture, mitigating undesirable flavors and sensations, and improving stability.

It is important to add the gum without clumping or aggregation so as to form a well mixed dispersion.

Additional bodying agents may be used in the dressing to provide desired body or viscosity in accordance with conventional practice, in addition to the xanthan/MCC complex dispersion (which serves as a creamy functional bodying agent). This bodying agent may be a starch paste or may comprise an edible gum such as xanthan gum, guar gum, propylene glycol ester of alginic acid or the like. Starch, may typically be present at a level of from about 0.5 percent to about 5 percent. The edible gum will typically be present at lower levels to provide desired body and texture.

The microcrystalline cellulose described above must be used in combination with a (cold water swelling) starch such as Mirathik(R) 468, a registered trademark of AE Staley & Co. or Ultra Tex 4, a cold water swelling starch available from National Starch and Chemical Co. The Mirathik 468 starch, which is fully described in a Staley Bulletin on Mirathik, and in U.S. Patent 4,465,702, when used in the invention provides excellent properties which are substantially similar to fat. Other suitable starches include hot-swelling starches such as for example Colflo-67. A proper balance of starch and the microcrystalline cellulose must be maintained.

Starch, preferably cold water swelling starch may for example be present in a ratio of about 0.5 to 1 to 2 to 1 based

on the cellulose.

Most of the starches used in the art require cook-up. These starches may be used in products of the invention. However, a preferred embodiment of the current invention relates to the fact that cold water swelling modified corn or food starch can be substituted to produce finished product requiring less thermal or mechanical energy.

The low fat/no fat food products desirably comprise from about 40 to about 95 percent by weight moisture, from about 0 to about 50 percent, carbohydrate in addition to the microcrystalline cellulose and starch of the invention, from about 0 to about 5 percent by weight protein and from about 0 to about 30 percent preferably 0 to 15 percent by weight or even less of fat, as well as salt, flavoring agents and other food components. Various specific food applications will be described in more detail hereinafter.

The food dressing utilized in accordance with the present invention will generally contain from about 20 to about 96 percent by weight of water, and sufficient acidifying agent to provide the aqueous component of the dressing vehicle with a pH of less than 4.1, and preferably in the range of from about 2.75 to about 3.75. In accordance with conventional food dressing manufacture, depending on the desired pH, the amount of water in the dressing and the effect of additional components of the food dressing, the acidifying agent which may include acetic acid, fumaric acid or a mixture of acetic and phosphoric acids, will generally be present in an amount of from about 0.1 to about 3.5 weight percent based on the total weight of the food dressing.

The food dressing vehicle which may be utilized includes oil-less dressings, pourable or viscous dressings and emulsified or non-emulsified food dressing products of the type commonly used as an adjunct on salads, vegetables, sandwiches and the like. Included within such classification are products such as fat-free mayonnaise, salad dressing and French dressing, and imitation thereof including condiments or reduced calorie products.

The oil, to the extent used in the dressing formulation, may be any of the well known edible triglyceride oils derived from vegetable matter, vegetable oils, such as, for example, palm kernel or corn oil, sucrose polyesters, soybean oil, safflower oil, cottonseed oil, and the like, or mixtures thereof.

The sweetener used is typically corn syrup or other maltodextrins. However, other sweeteners such as sucrose, dextrose, fructose, corn syrup solids and synthetic sweeteners may also be utilized. Suitable maltodextrins , for example have a DE of 0.5 to 45 such as Paselli SA2 or Paselli MD-20. For the purpose of this invention corn syrups and other maltodextrins are not considered as starches.

Corn syrups or other maltodextrins having a DE of less than about 50 preferably 15 to 42 are a particularly desirable component of such fat-free dressing formulations. Such corn syrup solids may be provided by acid, enzyme, or acid-enzyme hydrolysis of corn starch. The dextrose equivalent (DE) value may be calculated according to the formula DE = 100/(Mn/180.16) where Mn is the number average molecular weight of the corn syrup solids. A substantial proportion of 15-42 DE corn syrup solids may be provided in the pourable dressing products in order to provide maximum benefits. In this regard, the pourable dressing may desirably comprise from about 0 to about 30 weight percent, and preferably in the range of from about 5 to about 20 weight percent of such sweeteners, for example 15-42 DE corn syrup solids based on the total weight of the pourable dressing product. The low dextrose equivalent corn syrup solids are believed to provide the pourable dressing product with more pleasing fat-mimetic characteristics, and pleasing organoleptic characteristics.

Small amounts of any suitable emulsifying agent may be used in the salad dressing compositions of the invention. In this connection, egg yolk solids, protein, gum arabic, carob bean gum, guar gum, gum karaya, gum tragacanth, carrageenan, pectin, soy lecithin, propylene glycol esters of alginic acid, sodium carboxymethyl-cellulose, polysorbates and mixtures thereof may be used as emulsifying agents in accordance with conventional food dressing manufacturing practices.

Various other ingredients, such as spices and other flavoring agents, and preservatives such as sorbic acid (including salts thereof) may also be included in effective amounts.

The dressing vehicle may have an aqueous pH of about 4.1 or lower, preferably in the range of from about 2.75 to about 3.75. Any suitable edible acid or mixture of acid may be used to provide the desired level of acidity in the emulsified dressing, with suitable edible organic and inorganic acids including lactic acid, citric acid, fumaric acid, malic acid phosphoric acid, hydrochloric acid, acetic acid and mixtures thereof. Acetic/phosphoric and acetic/phosphoric/lactic are particularly preferred mixtures of acidifying agents. The amount utilized to achieve a desired pH will depend on a variety of factors known in the art including the buffering capacity of protein components of the dressing.

Applicants have also discovered that the specific process parameters including the order of addition, time of mixing, appropriate temperature, concentration of ingredients during sequential steps and the like sometimes are critical.

All parts and proporations herein are on a weight % basis unless otherwise specified.

Having, generally described various aspects of the present invention, the invention will now be more particularly described with reference to the following specific Examples.

EXAMPLE 1

1. In a tank, add 1 part microcrystalline cellulose to 15-20 parts of water under agitation. Mix for 10 minutes and then raise the ratio of water to microcrystalline cellulose to 30 to 1. Add 0.1-0.2 parts xanthan gum. Continue mixing for an additional 5 minutes.

2. Under agitation add the following ingredients in sequential order:

5-6 parts high fructose corn syrup
4-5 parts distilled vinegar
0.5-0.6 parts of lemon juice concentrate
1 part garlic juice
4-5 parts of sugar
1-2 parts salt
2 parts of other flavor ingredients containing 0.02-0.03 parts of titanium dioxide
2-3 parts of a dry starch/sugar blend

Maintain agitation for an additional 10 minutes.

3. In a second tank, put 0.5-1.5 parts of partially hydrogenated soybean oil and place under agitation. To the oil add:

0.08-0.10 parts of propylene glycol alginate
0.5 parts modified food starch
0.003-0.004 parts of calcium disodium ethylenediaminetetra-acetate (EDTA)

agitate the mixture until smooth and continue mixing.

4. Add the contents from the second tank into the first containing the microcrystalline cellulose mixture under agitation.

5. Move the product to a holding tank and then bottle off.

It is envisioned that addition of sufficient oil to produce a dressing containing up to about 30% by weight of oil could be accomplished by this procedure.

EXAMPLE 2

FAT MIMETIC	versions		
FORMULAE:	A parts	B parts	C parts
MICROCRYSTALLINE CELLULOSE(1)	0.3	4.0	5.6
XANTHAN GUM(2)	0.1	0.5	0.4
STARCH(3)	0.3	6.0	3.2
PROPYLENE GLYCOL ALGINATE(4)	0.1	0.4	0.5
TITANIUM DIOXIDE DISPERSION(5)	0.06	0.86	0.3
WATER	90-99	80-90	70-95

BOTH PREPARATION METHODS FOR EACH FORMULA:

Method one: Into a 1000 ml plastic beaker, add room temperature water (75°F =24°C). Separately weigh out each of the remaining ingredients. Under agitation as above, add the microcrystalline cellulose. Mix for 3 to 5 minutes at 2000 RPM until smooth. Then, add the xanthan, and mix an additional 5 minutes until smooth. Then, add the starch, mix one minute. Even if not smooth, add the PGA, mix one minute, then titanium dioxide. Mix 10 minutes

more until homogeneous.

Method two: into a 1000 ml plastic beaker, add room temperature water (75°F). (≈ 24°C) Weigh out each of the remaining ingredients including titanium dioxide dispersion and blend them together in another container (manual mixing).

Add the dry blend fat mimetic slowly into the beaker containing water while agitating at high shear, approximately 2000 RPM, using a TALBOYS T-Line Laboratory Stirrer #134-1 fitted with propeller blades. The mixture is further agitated for 10 minutes until smooth.

Preferred vendors:

(1) Avicel CL-611, FMC Corp.
(2) Keltrol T, Kelco Div., Merck & Co.
(3) Mira-Thik 468, A.E. Staley Mfg. Co.
(4) Kelcoloid LVF, Kelco Div., Merck & Co.
(5) 9113 white dispersion S.D., Werner-Jenkinson Div., Universal Foods Corp.

EXAMPLE 3

	DRESSINGS		
	French Style	Thousand Island	Ranch
FAT MIMITIC "C" (from Example 1 containing 85% water)	25 parts	26 parts	30 parts
XANTHAN	--	0.2	0.4
STARCH	1	--	1.5
PROPYLENE GLYCOL ALGINATE	--	--	0.1
TITANIUM DIOXIDE DISPERSION	--	0.1	0.4
WATER	25	21	42
VINEGAR, 100 GR.	9	8	8
SOYBEAN OIL	2	--	--
SALT	1.5	2	2
TOMATO	7	11	--
SUGAR	12	10	2
FLAVOURING/COLOURING	3	10	2.5
PRESERVATIVES	0.3	0.2	0.2
HIGH FRUCTOSE CORN SYRUP	15	--	--
CORN SYRUP, 43. D.E.	--	10	6
MALTODEXTRIN	--	--	4

EXAMPLE PROCEDURE: FRENCH

To a suitable container, 70°F (≈ 21°C) water is added, under agitation the fat mimic is added. After approximately 10 minutes the mixture is smooth; the remaining liquids and solids (not including most of the tomato) is added under agitation. When the mixture is homogeneous (after approximately 10 minutes additional agitation), the mixture is emulsified, and the remaining part of the tomato portion is added back.

It is understood that the examples and embodiments described herein are for illustrative purposes only and that various modifications or changes in the light thereof will be suggested to persons skilled in the art and are to be included within the spirit and purview of this application and the scope of the appended claims.

Description for the following Contracting States : FR, IT, PT, IE

This invention relates to a unique combination of ingredients and a process for the preparation of low fat/no fat, reduced calorie salad dressings which mimic the functional properties of higher dressings fat.

The Related Art

Recent trends in the field of salad dressings have been directed to the development of reduced fat or substantially fat-free products which possess a smooth and creamy mouthfeel, as well as a texture and lubricity which approach the texture and mouthfeel of edible fat containing food products. Substantial work has been carried out with bulking agents such as powdered and microcrystalline cellulose in fat-containing and reduced fat food products. U.S. 5,011,701 and patents cited therein relate to the preparation, or use of various types of cellulose in various food products. Such cellulose materials have been used or proposed for reduced fat or substantially fat-free food products. However, as the fat content is reduced in food products containing substantial levels of cellulose products such as microcrystalline cellulose, adverse organoleptic effects such as undesirable mouthcoating or drying sensations, and a lack of a well-rounded organoleptic sensation corresponding to that provided by conventional fat-containing food products such as viscous and pourable dressings, tend to become more pronounced.

Microcrystalline cellulose has been used in low and reduced calorie food formulations as both a carbohydrate thickening agent and as a fat replacer, with powdered products of relatively large particle size (e.g., 15-90 micrometer length) utilized for carbohydrate reduction and colloidal grades of submicron size being used to reduce fat, generally with the adverse result mentioned above.

U.S. 5,011,701 deals with this problem by a series of at least two high shear operations to insure the long term dispersibility of the microcrystalline cellulose. This is a relatively energy intensive process requiring substantial time and energy to accomplish. U.S. 5,087,471 related to this case further specifies processing steps.

In addition to microcrystalline cellulose, other ingredients have been employed in combination in attempts to produce low fat or no fat dressings. Starch, for example, when used alone may produce a gummy, pasty, chalky dressing with the tendency to block flavor. Further, a dressing using only starch will not have satisfactory pourability.

Heretofore, preparation of a low fat/no fat salad dressing prepared with microcrystalline cellulose yet having excellent fat functional mimetic properties while using relatively low energy processes has not been completely satisfactory.

Accordingly, it is an object of the invention to overcome one or more of the disadvantages of the art with the accompanying benefit of producing low fat/no fat, reduced calorie salad dressings with the taste and functionality of full fat salad dressings.

SUMMARY OF THE INVENTION

It has now been discovered that salad dressing can be produced with less thermal and mechanical energy than expected, yet a no/low fat salad dressing containing microcrystalline cellulose and starch as well as the other ingredients of this invention can be prepared. The invention focuses on the formulation and processing of a no/low fat (0-30%) salad dressing by employing a unique fat mimetic combination of starch, preferably cold water swelling starch, colloidal microcrystalline cellulose, xanthan gum and optionally algin derivatives and optionally opacifiers to produce the desired product. Titanium dioxide is the preferred opacifier and is added to improve the overall appearance of the dressing by making it more opaque and less translucent. The formulation substantially mimics the functional properties of fat. In addition, it has been discovered that two unique methods of addition of the ingredients, in the processing of this invention to produce salad dressings with the desired functionality, are critical.

According to the invention described more fully below, there is provided a fat mimetic composition which is used to provide an optionally low calorie, dispersed, reduced or low fat salad dressing. The fat mimetic composition can frequently be used in other food materials where the organoleptic properties of fat are desirable. This dressing has a substantial functional and organoleptic resemblance to other dressings having a higher fat content.

The fat mimetic composition comprises a unique combination of an intimate dry mixture of:

1. 30% to 70% colloidal microcrystalline cellulose;

2. 30% to 70% starch, preferably a cold water swelling starch;

3. 1% to 15% gum selected from the group consisting of xanthan gum, carrageenan gum, locust bean gum, guar and the like provided there is sufficient gum to protect the microcrystalline cellulose from flocculation and the like.

4. 0% to 5% alginate derivatives selected from the group consisting of propylene glycol alginate, sodium alginate

and the like;

5. 0% to 10%, preferably 0% to 5% opacifier selected from the group consisting of TiO_2, milk solids and the like provided an opacifier is desirable.

70 to 99% water sufficient to form a stable essentially dispersed fat mimetic system is then employed if desirable.

This composition, when formulated in a dressing containing no fat or very low fat up to about 30% gives an organoleptic result which is essentially similar to dressings containing higher amounts of fat. The amount of mimetic employed is about 1% to 10% dry solids on a final formula dressing basis.

The unique no fat or low fat dressing has the following composition:

0.1%-10% colloidal microcrystalline cellulose; 0.1%-3% for pourable dressing and higher amounts say 0.1 to 5% for gelled consistency;

0.5%-4.5% starch, preferably a cold water swelling starch;

0.1%-0.6% of gum selected from the group consisting of xanthan gum, carrageenan gum, locust bean gum, guar, and the like;

0%-0.3% of alginates or alginate derivatives preferably propylene glycol alginate;

0% to 1.0%, preferably 0%-0.4% opacifier selected from TiO_2, milk solids and the like;

0.1%-25% flavor cocktail consisting essentially of spice extractives, natural or artificial flavors, relishes, vegetable particulates and the like;

3%-20% acidulant selected from distilled vinegar, cider vinegar, phosphoric acid, organic acids and the like;

0%-30% sweetening agent selected from the group consisting of synthetic sweeteners, high fructose corn syrup, corn syrups, sugar (saccharose), other maltodextrins and the like.

15%-80% water;

0%-30% and preferably 0% to about 15% oil selected from the group consisting of soybean oil, canola oil, olive oil, cottonseed oil, and their partially hydrogenated derivatives and the like;

For the purpose of this invention sweeteners such as corn syrups and maltodextrins are not considered as starch materials. The term carbohydrates, however includes inter alia starches, corn syrups and other maltodextrins.

In addition, two unique methods of preparation are described herein.

In the first case, the microcrystalline cellulose is slurried under agitation in an appropriate amount of water, the xanthan gum is then added to form a thickened slurry.

The next steps involve sequential addition under continued agitation of:

a) sweeteners
b) acids and flavors; and
c) salt

The opacifier is then added to the admixtures. The dry blend of (cold water swelling) starch is added next, then the alginate and preservatives. Oil, if any is added last. Agitation is continued throughout. After the ingredients are all added, the admixture is emulsified and bottled.

In the second case, a dry blend is prepared of the microcrystalline cellulose, the xanthan gum, the (cold water swelling) starch, the alginate and the opacifier. This dry blend is then slurried with agitation in an appropriate amount of water. With continuing agitation, the compensating ingredients are added, i.e., the additional xanthan gum and the alginate, if any, the sweeteners are then added together with the acid, flavors and salt. The preservatives such as sodium benzoate, potassium sorbate and EDTA may be added and again the oil is added last. Agitation is continued throughout to maintain the admixture. The admixture is finally emulsified and then bottled.

DETAILED DESCRIPTION OF THE INVENTION

Generally, the fat mimetic composition will contain five ingredients which when further formulated with appropriate components, produce substantially the organoleptic effect of other dressings having more fat. The ingredients on a dry basis are:

a) colloidal microcrystalline cellulose 30% to 70% and preferably 50% to 60%

b) starch, preferably a cold water swelling starch 30% to 70%, preferably 40% to 50%;

c) gum, preferably xanthan gum 1% to 15%, preferably 3% to 6%;

d) optionally alginate 0% to 5% and preferably when present propylene glycol alginate 1% to 3%,

e) the opacifier is also optional and when present, is present at an amount of about 0 to 10 %, more preferred 0 to 5%, most preferably 0.5% to 4%.

This fat mimetic composition may be used to advantage with the general dressing formulations described below.

Generally, the low or no fat salad dressings of the invention contain from about 0.1 to 5 %, more preferred 0.25 to about 4 weight percent of dispersed particulate, microcrystalline cellulose, from about 50 to about 99 weight percent of water, from about 1 to about 35 weight percent digestible carbohydrates (including the starches and the sweeteners), from about 0 to about 10 weight percent protein, and less than about 7 weight percent of digestible triglycerides , preferably 0 to 3%.

The microcrystalline cellulose of the invention may be any microcrystalline cellulose prepared in known manner such as for example Avicel(R) which is a registered trademark of FMC Corporation. The preparation and use of this type of microcrystalline cellulose is described in Bulletin G-34 on Avicel produced by FMC.

Avicel CL-611 is a particularly preferred microcrystalline cellulose because of its colloidal properties. This material is a colloidal grade prepared by co-processing with carboxymethyl cellulose and sodium carboxymethyl cellulose. When used herein, microcrystalline cellulose preferably means such a co-processed cellulose 70% of the material has a particle size of less than 0.2 microns.

Selected hydrocolloids may be used to advantage, for example, xanthan gum. Although xanthan gum is commonly used at lower levels to protect microcrystalline cellulose as described in the FMC Brochure mentioned above, applicants employ a substantially higher proportion to obtain the beneficial properties of the gum. Suspension, fat mimetic properties and the like are improved by higher usage.

The most effective gum is xanthan gum. For example, an aqueous microcrystalline cellulose dispersion having a 2% to 10% microcrystalline cellulose solids content may be mixed in a low shear mixer, such as a Hobart mixer with an amount of gum equal to 5% to 20% of the weight of the cellulose dispersion.

By "xanthan gum" is meant the heteropolysaccharide produced by fermentation of the microorganism of the genus Xanthomonas. A discussion of the physical and chemical properties may be found in Industrial Gums, R.L. Whistler, Ed., Academic Press, N.Y. (1973). Locust bean, guar, etc., may also be used.

Carrageenans may also be used. They are structural polysaccharides of red sea plants such as Chondus crispus and Gigartina stellata. There are several varieties of carrageenans which may be extracted from red sea plants for food use, including kappa, lambda and iota carrageenans. Carrageenans are strongly charged anionic polyelectrolytes of high molecular weight and regular configuration which have anionic sulfate ester groups regularly disposed along a polysaccharide backbone. Lambda carrageenan has a general linear structure having substantially three pendant sulfate groups for each two monosaccharide groups along the polymer backbone.

Kappa carrageenan and iota carrageenan have significantly less ester sulfate than lambda carrageenan, with iota carrageenan having approximately one sulfate group per monosaccharide group, and kappa carrageenan having approximately one sulfate group for each two monosaccharide groups along the backbone. A discussion of the physical and chemical properties of lambda carrageenan may be found in Industrial Gums mentioned above.

Addition of gum at some stage in the process to the microcrystalline cellulose dispersion has several purposes. Coating the particulate cellulose with gum has the qualities of improving mouthfeel, improving texture, mitigating undesirable flavors and sensations, and improving stability.

It is important to add the gum without clumping or aggregation so as to form a well mixed dispersion.

Additional bodying agents may be used in the dressing to provide desired body or viscosity in accordance with conventional practice, in addition to the xanthan/MCC complex dispersion (which serves as a creamy functional bodying agent). This bodying agent may be a starch paste or may comprise an edible gum such as xanthan gum, guar gum, propylene glycol ester of alginic acid or the like. Starch, may typically be present at a level of from about 0.5 percent to

about 5 percent. The edible gum will typically be present at lower levels to provide desired body and texture.

The microcrystalline cellulose described above must be used in combination with a (cold water swelling) starch such as Mirathik(R) 468, a registered trademark of AE Staley & Co. or Ultra Tex 4, a cold water swelling starch available from National Starch and Chemical Co. The Mirathik 468 starch, which is fully described in a Staley Bulletin on Mirathik, and in U.S. Patent 4,465,702, when used in the invention provides excellent properties which are substantially similar to fat. Other suitable starches include hot-swelling starches such as for example Colflo-67. A proper balance of starch and the microcrystalline cellulose must be maintained.

Starch, preferably cold water swelling starch may for example be present in a ratio of about 0.5 to 1 to 2 to 1 based on the cellulose.

Most of the starches used in the art require cook-up. These starches may be used in products of the invention. However, a preferred embodiment of the current invention relates to the fact that cold water swelling modified corn or food starch can be substituted to produce finished product requiring less thermal or mechanical energy.

The low fat/no fat food products desirably comprise from about 40 to about 95 percent by weight moisture, from about 0 to about 50 percent, carbohydrate in addition to the microcrystalline cellulose and starch of the invention, from about 0 to about 5 percent by weight protein and from about 0 to about 30 percent preferably 0 to 15 percent by weight or even less of fat, as well as salt, flavoring agents and other food components. Various specific food applications will be described in more detail hereinafter.

The food dressing utilized in accordance with the present invention will generally contain from about 20 to about 96 percent by weight of water, and sufficient acidifying agent to provide the aqueous component of the dressing vehicle with a pH of less than 4.1, and preferably in the range of from about 2.75 to about 3.75. In accordance with conventional food dressing manufacture, depending on the desired pH, the amount of water in the dressing and the effect of additional components of the food dressing, the acidifying agent which may include acetic acid, fumaric acid or a mixture of acetic and phosphoric acids, will generally be present in an amount of from about 0.1 to about 3.5 weight percent based on the total weight of the food dressing.

The food dressing vehicle which may be utilized includes oil-less dressings, pourable or viscous dressings and emulsified or non-emulsified food dressing products of the type commonly used as an adjunct on salads, vegetables, sandwiches and the like. Included within such classification are products such as fat-free mayonnaise, salad dressing and French dressing, and imitation thereof including condiments or reduced calorie products.

The oil, to the extent used in the dressing formulation, may be any of the well known edible triglyceride oils derived from vegetable matter, vegetable oils, such as, for example, palm kernel or corn oil, sucrose polyesters, soybean oil, safflower oil, cottonseed oil, and the like, or mixtures thereof.

The sweetener used is typically corn syrup or other maltodextrins. However, other sweeteners such as sucrose, dextrose, fructose, corn syrup solids and synthetic sweeteners may also be utilized. Suitable maltodextrins , for example have a DE of 0.5 to 45 such as Paselli SA2 or Paselfin MD-20. For the purpose of this invention corn syrups and other maltodextrins are not considered as starches.

Corn syrups or other maltodextrins having a DE of less than about 50 preferably 15 to 42 are a particularly desirable component of such fat-free dressing formulations. Such corn syrup solids may be provided by acid, enzyme, or acid-enzyme hydrolysis of corn starch. The dextrose equivalent (DE) value may be calculated according to the formula DE = 100/(Mn/180.16) where Mn is the number average molecular weight of the corn syrup solids. A substantial proportion of 15-42 DE corn syrup solids may be provided in the pourable dressing products in order to provide maximum benefits. In this regard, the pourable dressing may desirably comprise from about 0 to about 30 weight percent, and preferably in the range of from about 5 to about 20 weight percent of such sweeteners, for example 15-42 DE corn syrup solids based on the total weight of the pourable dressing product. The low dextrose equivalent corn syrup solids are believed to provide the pourable dressing product with more pleasing fat-mimetic characteristics, and pleasing organoleptic characteristics.

Small amounts of any suitable emulsifying agent may be used in the salad dressing compositions of the invention. In this connection, egg yolk solids, protein, gum arabic, carob bean gum, guar gum, gum karaya, gum tragacanth, carrageenan, pectin, soy lecithin, propylene glycol esters of alginic acid, sodium carboxymethyl-cellulose, polysorbates and mixtures thereof may be used as emulsifying agents in accordance with conventional food dressing manufacturing practices.

Various other ingredients, such as spices and other flavoring agents, and preservatives such as sorbic acid (including salts thereof) may also be included in effective amounts.

The dressing vehicle may have an aqueous pH of about 4.1 or lower, preferably in the range of from about 2.75 to about 3.75. Any suitable edible acid or mixture of acid may be used to provide the desired level of acidity in the emulsified dressing, with suitable edible organic and inorganic acids including lactic acid, citric acid, fumaric acid, malic acid phosphoric acid, hydrochloric acid, acetic acid and mixtures thereof. Acetic/phosphoric and acetic/phosphoric/lactic are particularly preferred mixtures of acidifying agents. The amount utilized to achieve a desired pH will depend on a variety of factors known in the art including the buffering capacity of protein components of the dressing.

Applicants have also discovered that the specific process parameters including the order of addition, time of mixing, appropriate temperature, concentration of ingredients during sequential steps and the like sometimes are critical.

All parts and proporations herein are on a weight % basis unless otherwise specified.

Having, generally described various aspects of the present invention, the invention will now be more particularly described with reference to the following specific Examples.

EXAMPLE 1

1. In a tank, add 1 part microcrystalline cellulose to 15-20 parts of water under agitation. Mix for 10 minutes and then raise the ratio of water to microcrystalline cellulose to 30 to 1. Add 0.1-0.2 parts xanthan gum. Continue mixing for an additional 5 minutes.

2. Under agitation add the following ingredients in sequential order:

5-6 parts high fructose corn syrup
4-5 parts distilled vinegar
0.5-0.6 parts of lemon juice concentrate
1 part garlic juice
4-5 parts of sugar
1-2 parts salt
2 parts of other flavor ingredients containing 0.02-0.03 parts of titanium dioxide
2-3 parts of a dry starch/sugar blend

Maintain agitation for an additional 10 minutes.

3. In a second tank, put 0.5-1.5 parts of partially hydrogenated soybean oil and place under agitation. To the oil add:

0.08-0.10 parts of propylene glycol alginate
0.5 parts modified food starch
0.003-0.004 parts of calcium disodium ethylenediaminetetra-acetate (EDTA)

agitate the mixture until smooth and continue mixing.

4. Add the contents from the second tank into the first containing the microcrystalline cellulose mixture under agitation.

5. Move the product to a holding tank and then bottle off.

It is envisioned that addition of sufficient oil to produce a dressing containing up to about 30% by weight of oil could be accomplished by this procedure.

EXAMPLE 2

FAT MIMETIC	versions		
FORMULAE:	A parts	B parts	C parts
MICROCRYSTALLINE CELLULOSE[1]	0.3	4.0	5.6
XANTHAN GUM[2]	0.1	0.5	0.4
STARCH[3]	0.3	6.0	3.2
PROPYLENE GLYCOL ALGINATE[4]	0.1	0.4	0.5
TITANIUM DIOXIDE DISPERSION[5]	0.06	0.86	0.3
WATER	90-99	80-90	70-95

BOTH PREPARATION METHODS FOR EACH FORMULA:

Method one: Into a 1000 ml plastic beaker, add room temperature water (75°F ≈24°C). Separately weigh out each of the remaining ingredients. Under agitation as above, add the microcrystalline cellulose. Mix for 3 to 5 minutes at 2000 RPM until smooth. Then, add the xanthan, and mix an additional 5 minutes until smooth. Then, add the starch, mix one minute. Even if not smooth, add the PGA, mix one minute, then titanium dioxide. Mix 10 minutes more until homogeneous.

Method two: into a 1000 ml plastic beaker, add room temperature water (75°F). (≈ 24°C) Weigh out each of the remaining ingredients including titanium dioxide dispersion and blend them together in another container (manual mixing).

Add the dry blend fat mimetic slowly into the beaker containing water while agitating at high shear, approximately 2000 RPM, using a TALBOYS T-Line Laboratory Stirrer #134-1 fitted with propeller blades. The mixture is further agitated for 10 minutes until smooth.

Preferred vendors:

(1) Avicel CL-611, FMC Corp.
(2) Keltrol T, Kelco Div., Merck & Co.
(3) Mira-Thik 468, A.E. Staley Mfg. Co.
(4) Kelcoloid LVF, Kelco Div., Merck & Co.
(5) 9113 white dispersion S.D., Werner-Jenkinson Div., Universal Foods Corp.

EXAMPLE 3

	DRESSINGS		
	French Style	Thousand Island	Ranch
FAT MIMITIC "C" (from Example 1 containing 85% water)	25 parts	26 parts	30 parts
XANTHAN	--	0.2	0.4
STARCH	1	--	1.5
PROPYLENE GLYCOL ALGINATE	--	--	0.1
TITANIUM DIOXIDE DISPERSION	--	0.1	0.4
WATER	25	21	42
VINEGAR, 100 GR.	9	8	8
SOYBEAN OIL	2	--	--
SALT	1.5	2	2
TOMATO	7	11	--
SUGAR	12	10	2
FLAVOURING/COLOURING	3	10	2.5
PRESERVATIVES	0.3	0.2	0.2
HIGH FRUCTOSE CORN SYRUP	15	--	--
CORN SYRUP, 43. D.E.	--	10	6
MALTODEXTRIN	--	--	4

EXAMPLE PROCEDURE: FRENCH

To a suitable container, 70°F (≈ 21°C) water is added, under agitation the fat mimic is added. After approximately

10 minutes the mixture is smooth; the remaining liquids and solids (not including most of the tomato) is added under agitation. When the mixture is homogeneous (after approximately 10 minutes additional agitation), the mixture is emulsified, and the remaining part of the tomato portion is added back.

It is understood that the examples and embodiments described herein are for illustrative purposes only and that various modifications or changes in the light thereof will be suggested to persons skilled in the art and are to be included within the spirit and purview of this application and the scope of the appended claims.

Claims

Claims for the following Contracting States : AT, BE, CH, DE, DK, ES, GB, GR, LI, NL, SE

1. A fat mimetic composition comprising an intimate admixture of:

   30%-70% colloidal microcrystalline cellulose;

   30%-70% starch, preferably cold water swelling starch;

   1%-15% of gum selected from the group consisting of xanthan gum, carrageenan gum, locust bean gum, guar gum and mixtures thereof;

   0%-5% of alginate or alginate derivatives;

   0% to 10%, preferably 0%-5% opacifier selected from the group consisting of TiO_2, milk solids and mixtures thereof;

   whereby the mimetic imparts organoleptic properties similar to fat when formulated at an amount of 1% to 10% in a dressing containing up to about 30% fat; and wherein the mimetic does not comprise egg white.

2. A fat mimetic composition as defined in claim 1 consisting essentially of:

   50%-60% of said colloidal microcrystalline cellulose;
   40%-50% of said starch, preferably cold water swelling starch;
   3%-5% of said gum;
   1% to 3% of alginate wherein said alginate is propylene glycol alginate;
   0.5% to 4% of opacifier said opacifier being TiO_2.

3. A fat mimetic composition as defined in claim 1 consisting of:

   56% of said colloidal microcrystalline cellulose;
   32% of said starch, preferably cold water swelling starch;
   4% of said gum; said gum being xanthan gum;
   5% of said alginate; said alginate being propylene glycol alginate;
   3% of said opacifier; said opacifier being TiO_2

4. A salad dressing containing up to 30% fat comprising:

   0.1 to 5% starch, preferably 0.1 to 3.0% colloidal microcrystalline cellulose;

   0.5%-4.5% starch, preferably cold water swelling starch;

   0.1%-0.6% of gum selected from the group consisting of xanthan gum, carrageenan gum, locust bean gum, guar gum, and mixtures thereof;

   0%-0.3% of alginate derivatives selected from the group consisting of propylene glycol alginate; sodium alginate;

   0% to 1%, preferably 0%-0.4% opacifier selected from the group consisting of TiO_2, milk solids and mixtures thereof;

0.1%-25% flavor cocktail consisting essentially of spice extractives, natural or artificial flavors;

0% to 3.5% acidulant;

0%-30% sweeting agent;

0%-30% oil;

15%-80% water;

wherein said salad dressing does not comprise egg white and preferably has substantially identical organoleptic and functional properties as other dressings with higher fat content, said microcrystalline cellulose preferably being in the form of particles about 70% of which have a particle size of less than about 0.2 microns.

5. A salad dressing according to claim 4 having:

0.1%-2.0% of said colloidal microcrystalline cellulose;

0.1%-4% of said starch, preferably cold water swelling starch;

0.1%-0.5% of said gum selected from the group consisting of xanthan gum, carrageenan gum, locust bean gum, guar gum, and mixtures thereof;

0.1%-0.2% of said alginate derivatives selected from the group consisting of propylene glycol alginate, sodium alginate;

0.1%-0.3% of said TiO_2;

5%-25% of said flavor cocktail;

0.5%-3.5% of said acidulant;

5%-25% of said sweetening agent;

20%-70% water;

0%-15% oil.

6. A salad dressing according to claim 4 having:

0.8%-1.7% of said colloidal microcrystalline cellulose;

0.8%-2.5% of said starch, preferably cold water swelling starch;

0.12%-0.16% of said gum;

0%-0.15% of said alginate derivatives selected from the group consisting of propylene glycol alginate, sodium alginate;

0.1%-0.13% of said TiO_2;

4.5%-11.5% of said flavor cocktail;

0.8%-1.0% of acidulant wherein said acidulant is vinegar;

12%-27% of said sweetening agent;

45%-69% water;

0%-15% oil.

7. A process for preparing a low fat dressing comprising:

(a) adding 1 part of colloidal microcrystalline cellulose to about 10 to 30 parts of water, under agitation in a vessel at ambient temperature 60°F-75°F (15°C-24°C) continuing agitation to form a dispersion;

(b) adding to the dispersion under agitation 0.1 to 0.2 parts of xanthan gum;

(c) adding under agitation the following ingredients in sequential order;

1-11 parts high fructrose corn syrup/sugar,
4-5 parts distilled vinegar,
10-11 parts flavor cocktail,
0.02-0.05 parts of titanium dioxide,
1-2 parts of a cold water swelling starch,
0.5-1.5 parts of soybean oil,
0.08-0.10 parts of propylene glycol alginate,
0.5 parts modified food starch,
0.003-0.004 parts of calcium disodium, ethylenediaminetetra-acetate (EDTA),

(d) agitating the mixture until smooth with continued mixing;

(e) moving the product to a holding tank and then bottling.

8. A process for preparing a salad dressing comprising:

(a) adding 70 to 99 parts of water to a vessel and beginning agitation;

(b) preparing a dry mix containing

0.3 to 5.6 parts colloidal microcrystalline cellulose,
0.3 to 6 parts cold water swelling starch,
0.1 to 0.5 parts of xanthan gum,
0.1 to 0.5 parts of propylene glycol alginate,
0.04 to 0.52 TiO_2

(c) adding the dry mix to the vessel containing the water under agitation to prepare a fat mimetic dispersion;

(d) in a second vessel containing 21-45 parts of water add:

8 to 10 parts vinegar,
12 to 27 parts sweetener,
5 to 25 parts flavor cocktail,
0 to 30 parts oil;

(e) agitating the mixture in the second vessel until homogeneous;

(f) dispersing 25 to 30 parts of the fat mimetic in the homogeneous mixture in the second vessel.

Claims for the following Contracting States : FR, IT, PT, IE

1. A fat mimetic composition comprising an intimate admixture of:

30%-70% colloidal microcrystalline cellulose;

30%-70% starch, preferably cold water swelling starch;

1%-15% of gum selected from the group consisting of xanthan gum, carrageenan gum, locust bean gum, guar gum and mixtures thereof;

0%-5% of alginate or alginate derivatives;

0% to 10%, preferably 0%-5% opacifier selected from the group consisting of TiO_2, milk solids and mixtures thereof;
whereby the mimetic imparts organoleptic properties similar to fat when formulated at an amount of 1% to 10% in a dressing containing up to about 30% fat.

2. A fat mimetic composition as defined in claim 1 consisting essentially of:

50%-60% of said colloidal microcrystalline cellulose;
40%-50% of said starch, preferably cold water swelling starch;
3%-5% of said gum;
1% to 3% of alginate wherein said alginate is propylene glycol alginate;
0.5% to 4% of opacifier said opacifier being TiO_2.

3. A fat mimetic composition as defined in claim 1 consisting of:

56% of said colloidal microcrystalline cellulose;
32% of said starch, preferably cold water swelling starch;
4% of said gum; said gum being xanthan gum;
5% of said alginate; said alginate being propylene glycol alginate;
3% of said opacifier; said opacifier being TiO_2

4. A salad dressing containing up to 30% fat comprising:

0.1 to 5%, preferably 0.1 to 3.0% colloidal microcrystalline cellulose;

0.5%-4.5% starch, preferably cold water swelling starch;

0.1%-0.6% of gum selected from the group consisting of xanthan gum, carrageenan gum, locust bean gum, guar gum, and mixtures thereof;

0%-0.3% of alginate derivatives selected from the group consisting of group consisting of propylene glycol alginate; sodium alginate;

0% to 1%, preferably 0%-0.4% opacifier selected from the group consisting of TiO_2, milk solids and mixtures thereof;

0.1%-25% flavor cocktail consisting essentially of spice extractives, natural or artificial flavors;

0% to 3.5% acidulant;

0%-30% sweeting agent;

0%-30% oil;

15%-80% water;
said salad dressing preferably having substantially identical organoleptic and functional properties as other dressings with higher fat content, said microcrystalline cellulose preferably being in the form of particles about 70% of which have a particle size of less than about 0.2 microns.

5. A salad dressing according to claim 4 having:

0.1%-2.0% of said colloidal microcrystalline cellulose;

0.1%-4% of said starch, preferably cold water swelling starch;

0.1%-0.5% of said gum selected from the group consisting of xanthan gum, carrageenan gum, locust bean gum, guar gum and mixtures thereof;

0.1%-0.2% of said alginate derivatives selected from the group consisting of propylene glycol alginate, sodium alginate;

0.1%-0.3% of said TiO_2;

5%-25% of said flavor cocktail;

0.5%-3.5% of said acidulant;

5%-25% of said sweetening agent;

20%-70% water;

0%-15% oil.

6. A salad dressing according to claim 4 having:

0.8%-1.7% of said colloidal microcrystalline cellulose;

0.8%-2.5% of said starch, preferably cold water swelling starch;

0.12%-0.16% of said gum;

0%-0.15% of said alginate derivatives selected from the group consisting of propylene glycol alginate, sodium alginate;

0.1%-0.13% of said TiO_2;

4.5%-11.5% of said flavor cocktail;

0.8%-1.0% of acidulant wherein said acidulant is vinegar;

12%-27% of said sweetening agent;

45%-69% water;

0%-15% oil.

7. A process for preparing a low fat dressing comprising:

(a) adding 1 part of colloidal microcrystalline cellulose to about 10 to 30 parts of water, under agitation in a vessel at ambient temperature 60°F-75°F (15°C-24°C) continuing agitation to form a dispersion;

(b) adding to the dispersion under agitation 0.1 to 0.2 parts of xanthan gum;

(c) adding under agitation the following ingredients in sequential order:

1-11 parts high fructrose corn syrup/sugar,
4-5 parts distilled vinegar,
10-11 parts flavor cocktail,
0.02-0.05 parts of titanium dioxide,
1-2 parts of a cold water swelling starch,
0.5-1.5 parts of soybean oil,

0.08-0.10 parts of propylene glycol alginate,
0.5 parts modified food starch,
0.003-0.004 parts of calcium disodium, ethylenediaminetetra-acetate (EDTA),

(d) agitating the mixture until smooth with continued mixing;

(e) moving the product to a holding tank and then bottling.

8. A process for preparing a salad dressing comprising:

(a) adding 70 to 99 parts of water to a vessel and beginning agitation;

(b) preparing a dry mix containing 0.3 to 5.6 parts colloidal microcrystalline cellulose,

0.3 to 6 parts cold water swelling starch,
0.1 to 0.5 parts of xanthan gum,
0.1 to 0.5 parts of propylene glycol alginate,
0.04 to 0.52 TiO_2

(c) adding the dry mix to the vessel containing the water under agitation to prepare a fat mimetic dispersion;

(d) in a second vessel containing 21-45 parts of water add:

8 to 10 parts vinegar,
12 to 27 parts sweetener,
5 to 25 parts flavor cocktail,
0 to 30 parts oil;

(e) agitating the mixture in the second vessel until homogeneous;

(f) dispersing 25 to 30 parts of the fat mimetic in the homogeneous mixture in the second vessel.

Patentansprüche

Patentansprüche für folgende Vertragsstaaten : AT, BE, CH, DE, DK, ES, GB, GR, LI, NL, SE

1. Fettmimetische Zusammensetzung, umfassend eine innige Mischung aus:

30 bis 70% kolloidaler mikrokristalliner Cellulose,
30 bis 70% Stärke, vorzugsweise kaltwasserquellende Stärke,
1 bis 15% Gummi, ausgewählt aus der aus Xanthangummi, Carrageenangummi, Johannisbrotgummi, Guargummi und Mischungen davon bestehenden Gruppe,
0 bis 5% Alginat oder Alginatderivaten,
0 bis 10%, vorzugsweise 0 bis 5%, Opazifizierungsmittel, ausgewählt aus der aus TiO_2, Milchfeststoffen und Mischungen davon bestehenden Gruppe,
wobei die mimetische Zusammensetzung organoleptische Eigenschaften ähnlich denen von Fett verleiht, wenn sie in einer Menge von 1 bis 10% in ein Dressing formuliert wird, das bis zu etwa 30% Fett enthält, und wobei die mimetische Zusammensetzung kein Eiweiß enthält.

2. Fettmimetische Zusammensetzung gemäß Anspruch 1, im wesentlichen bestehend aus:

50 bis 60% der kolloidalen mikrokristallinen Cellulose,
40 bis 50% der Stärke, vorzugsweise kaltwasserquellender Stärke,
3 bis 5% des Gummis,
1 bis 3% Alginat, wobei das Alginat Propylenglykolalginat ist,
0,5 bis 4% Opazifizierungsmittel, wobei dieses TiO_2 ist.

3. Fettmimetische Zusammensetzung nach Anspruch 1, bestehend aus:

56% der kolloidalen mikrokristallinen Cellulose,
32% der Stärke, vorzugsweise kaltwasserquellender Stärke,
4% des Gummis, wobei dieser Xanthangummi ist,
5% des Alginats, wobei dieses Propylenglykolalginat ist,
3% des Opazifizierungsmittels, wobei dieses TiO_2 ist.

4. Salatdressing, das bis zu 30% Fett enthält, umfassend:

0,1 bis 5% Stärke, vorzugsweise 0,1 bis 3,0% kolloidale mikrokristalline Stärke,
0,5 bis 4,5% Stärke, vorzugsweise kaltwasserquellende Stärke,
0,1 bis 0,6% Gummi, ausgewählt aus der aus Xanthangummi, Carregeenangummi, Johannisbrotgummi, Guargummi und Mischungen davon bestehenden Gruppe,
0 bis 0,3% Alginatderivate, ausgewählt aus der aus Propylenglykolalginat und Natriumalginat bestehenden Gruppe, 0 bis 1%, vorzugsweise 0 bis 0,4%, Opazifizierungsmittel, ausgewählt aus der aus TiO_2, Milchfeststoffen und Mischungen davon bestehenden Gruppe,
0,1 bis 25% Aroma-Cocktail, im wesentlichen bestehend aus Gewürzextraken, natürlichen oder künstlichen Aromen,
0 bis 3,5% Säuerungsmittel,
0 bis 30% Süßungsmittel,
0 bis 30% Öl,
15 bis 80% Wasser,
wobei dieses Salatdressing kein Eiweiß enthält und vorzugsweise im wesentlichen identische organoleptische und funktionelle Eigenschaften wie andere Dressings mit höherem Fettgehalt aufweist, wobei die mikrokristalline Cellulose vorzugsweise in Form von Teilchen vorliegt, von denen etwa 70% eine Teilchengröße von weniger als etwa 0,2 µm aufweisen.

5. Salatdressing nach Anspruch 4 mit:

0,1 bis 2,0% der kolloidalen mikrokristallinen Cellulose,
0,1 bis 4% der Stärke, vorzugsweise kaltwasserquellender Stärke,
0,1 bis 0,5% des Gummis, ausgewählt aus der aus Xanthangummi, Carrageenangummi, Johannisbrotgummi, Guargummi und Mischungen davon bestehenden Gruppe,
0,1 bis 0,2% der Alginatderivate, ausgewählt aus der aus Propylenglykolalginat und Natriumalginat bestehenden Gruppe,
0,1 bis 0,3% des TiO_2,
5 bis 25% des Aroma-Cocktails,
0,5 bis 3,5% des Säuerungsmittels,
5 bis 25% des Süßungsmittels,
20 bis 70% Wasser,
0 bis 15% Öl.

6. Salatdressing nach Anspruch 4 mit:

0,8 bis 1,7% der kolloidalen mikrokristallinen Cellulose,
0,8 bis 2,5% der Stärke, vorzugsweise kaltwasserquellender Stärke,
0,12 bis 0,16% des Gummis,
0 bis 0,15% der Alginatderivate, ausgewählt aus der aus Propylenglykolalginat und Natriumalginat bestehenden Gruppe,
0,1 bis 0,13% des TiO_2,
4,5 bis 11,5% des Aroma-Cocktails,
0,8 bis 1,0% des Säuerungsmittels, wobei dieses Essig ist,
12 bis 27% des Süßungsmittels,
45 bis 96% Wasser,
0 bis 15% Öl.

7. Verfahren zur Herstellung eines fettarmen Dressings, umfassend:

(a) Zugeben von 1 Teil kolloidaler mikrokristalliner Cellulose zu etwa 10 bis 30 Teilen Wasser unter Rühren in

einem Gefäß bei Umgebungstemperatur von 60 bis 75°F (15 bis 24°C) und Fortsetzen des Rührens zur Bildung einer Dispersion;
(b) Zugeben von 0,1 bis 0,2 Teilen Xanthangummi unter Rühren zu der Dispersion;
(c) aufeinanderfolgendes Zugeben der folgenden Bestandteile unter Rühren:

1 bis 11 Teile Maissirup mit hohem Fructosegehalt/Zucker,
4 bis 5 Teile destillierter Essig,
10 bis 11 Teile Aroma-Cocktail,
0,02 bis 0,05 Teile Titandioxid,
1 bis 2 Teile einer kaltwasserquellenden Stärke,
0,5 bis 1,5 Teile Sojaöl,
0,08 bis 0,10 Teile Propylenglykolalginat,
0,5 Teile modifizierte Nahrungsmittelstärke,
0,003 bis 0,004 Teile Calciumdinatriumethylendiamintetraacetat (EDTA);

(d) Rühren der Mischung unter fortgesetztem Mischen, bis sie glatt ist;
(e) Überführen des Produktes in einen Haltetank und anschließendes Abfüllen in Flaschen.

8. Verfahren zur Herstellung eines Salatdressings, umfassend:

(a) Zugeben von 70 bis 99 Teilen Wasser in ein Gefäß und Beginn des Rührens;
(b) Herstellen einer Trockenmischung, enthaltend:

0,3 bis 5,6 Teile kolloidale mikrokristalline Cellulose,
0,3 bis 6 Teile kaltwasserquellende Stärke,
0,1 bis 0,5 Teile Xanthangummi,
0,1 bis 0,5 Teile Propylenglykolalginat,
0,04 bis 0,52 Teile TiO_2;

(c) Zugeben der trockenen Mischung in das Wasser enthaltende Gefäß unter Rühren zur Herstellung einer fettmimetischen Dispersion;
(d) Zugeben von

8 bis 10 Teilen Essig,
12 bis 27 Teilen Süßungsmittel,
5 bis 25 Teilen Aroma-Cocktail,
0 bis 30 Teilen Öl;
in ein zweites Gefäß, das 21 bis 45 Teile Wasser enthält;

(e) Rühren der Mischung in dem zweiten Gefäß bis zur Homogenität;
(f) Dispergieren von 25 bis 30 Teilen der fettmimetischen Dispersion in der homogenen Mischung in dem zweiten Gefäß.

Patentansprüche für folgende Vertragsstaaten : FR, IT, PT, IE

1. Fettmimetische Zusammensetzung, umfassend eine innige Mischung aus:

30 bis 70% kolloidaler mikrokristalliner Cellulose,
30 bis 70% Stärke, vorzugsweise kaltwasserquellender Stärke,
1 bis 15% Gummi, ausgewählt aus der aus Xanthangummi, Carrageenangummi, Johannisbrotgummi, Guargummi und Mischungen davon bestehenden Gruppe,
0 bis 5% Alginat oder Alginatderivaten,
0 bis 10%, vorzugsweise 0 bis 5%, Opazifizierungsmittel, ausgewählt aus der aus TiO_2, Milchfeststoffen und Mischungen davon bestehenden Gruppe,
wobei die mimetische Zusammensetzung organoleptische Eigenschaften ähnlich denen von Fett verleiht, wenn sie in einer Menge von 1 bis 10% in ein Dressing formuliert wird, das bis zu etwa 30% Fett enthält.

2. Fettmimetische Zusammensetzung gemäß Anspruch 1, im wesentlichen bestehend aus:

50 bis 60% der kolloidalen mikrokristallinen Cellulose,
40 bis 50% der Stärke, vorzugsweise kaltwasserquellender Stärke,
3 bis 5% des Gummis,
1 bis 3% Alginat, wobei das Alginat Propylenglykolalginat ist,
0,5 bis 4% Opazifizierungsmittel, wobei dieses TiO_2 ist.

3. Fettmimetische Zusammensetzung nach Anspruch 1, bestehend aus:

56% der kolloidalen mikrokristallinen Cellulose,
32% der Stärke, vorzugsweise kaltwasserquellende Stärke,
4% des Gummis, wobei dieser Gummi Xanthangummi ist,
5% des Alginats, wobei dieses Propylenglykolalginat ist,
3% des Opazifizierungsmittels, wobei dieses TiO_2 ist.

4. Salatdressing, das bis zu 30% Fett enthält, umfassend:

0,1 bis 5%, vorzugsweise 0,1 bis 3,0%, kolloidale mikrokristalline Stärke,
0,5 bis 4,5% Stärke, vorzugsweise kaltwasserquellende Stärke,
0,1 bis 0,6% Gummi, ausgewählt aus der aus Xanthangummi, Carrageenangummi, Johannisbrotgummi, Guargummi und Mischungen davon bestehenden Gruppe,
0 bis 0,3% Alginatderivate, ausgewählt aus der aus Propylenglykolalginat und Natriumalginat bestehenden Gruppe,
0 bis 1%, vorzugsweise 0 bis 0,4%, Opazifizierungsmittel, ausgewählt aus der aus TiO_2, Milchfeststoffen und Mischungen davon bestehenden Gruppe,
0,1 bis 25% Aroma-Cocktail, im wesentlichen bestehend aus Gewürzextraken, natürlichen oder künstlichen Aromen,
0 bis 3,5% Säuerungsmittel,
0 bis 30% Süßungsmittel,
0 bis 30% Öl,
15 bis 80% Wasser,
wobei dieses Salatdressing kein Eiweiß enthält und vorzugsweise im wesentlichen identische organoleptische und funktionelle Eigenschaften wie andere Dressings mit höherem Fettgehalt aufweist, wobei die mikrokristalline Cellulose vorzugsweise in Form von Teilchen vorliegt, von denen etwa 70% eine Teilchengröße von weniger als etwa 0,2 µm aufweisen.

5. Salatdressing nach Anspruch 4 mit:

0,1 bis 2,0% der kolloidalen mikrokristallinen Cellulose,
0,1 bis 4% der Stärke, vorzugsweise kaltwasserquellender Stärke,
0,1 bis 0,5% des Gummis, ausgewählt aus der aus Xanthangummi, Carrageenangummi, Johannisbrotgunmi, Guargummi und Mischungen davon bestehenden Gruppe,
0,1 bis 0,2% der Alginatderivate, ausgewählt aus der aus Propylenglykolalginat und Natriumalginat bestehenden Gruppe,
0,1 bis 0,3% des TiO_2,
5 bis 25% des Aroma-Cocktails,
0,5 bis 3,5% des Säuerungsmittels,
5 bis 25% des Süßungsmittels,
20 bis 70% Wasser,
0 bis 15% Öl.

6. Salatdressing nach Anspruch 4 mit:

0,8 bis 1,7% der kolloidalen mikrokristallinen Cellulose,
0,8 bis 2,5% der Stärke, vorzugsweise kaltwasserquellender Stärke,
0,12 bis 0,16% des Gummis,
0 bis 0,15% der Alginatderivate, ausgewählt aus der aus Propylenglykolalginat und Natriumalginat bestehenden Gruppe,
0,1 bis 0,13% des TiO_2,

4,5 bis 11,5% des Aroma-Cocktails,
0,8 bis 1,0% des Säuerungsmittels, wobei dieses Essig ist,
12 bis 27% des Süßungsmittels,
45 bis 96% Wasser,
0 bis 15% Öl.

7. Verfahren zur Herstellung eines fettarmen Dressings, umfassend:

(a) Zugeben von 1 Teil kolloidaler mikrokristalliner Cellulose zu etwa 10 bis 30 Teilen Wasser unter Rühren in einem Gefäß bei Umgebungstemperatur von 60 bis 75°F (15 bis 24°C) und Fortsetzen des Rührens zur Bildung einer Dispersion;
(b) zugeben von 0,1 bis 0,2 Teilen Xanthangummi unter Rühren zu der Dispersion;
(c) aufeinanderfolgendes Zugeben der folgenden Bestandteile unter Rühren:

1 bis 11 Teile Maissirup mit hohem Fructosegehalt/Zucker,
4 bis 5 Teile destillierter Essig,
10 bis 11 Teile Aroma-Cocktail,
0,02 bis 0,05 Teile Titandioxid,
1 bis 2 Teile einer kaltwasserquellenden Stärke,
0,5 bis 1,5 Teile Sojaöl,
0,08 bis 0,10 Teile Propylenglykolalginat,
0,5 Teile modifizierte Nahrungsmittelstärke,
0,003 bis 0,004 Teile Calciumdinatriumethylendiamintetraacetat (EDTA);

(d) Rühren der Mischung unter fortgesetztem Mischen, bis sie glatt ist;
(e) Überführen des Produktes in einen Haltetank und anschließendes Abfüllen in Flaschen.

8. Verfahren zur Herstellung eines Salatdressings, umfassend:

(a) Zugeben von 70 bis 99 Teilen Wasser in ein Gefäß und Beginn des Rührens;
(b) Herstellen einer Trockenmischung, enthaltend:

0,3 bis 5,6 Teile kolloidale mikrokristalline Cellulose,
0,3 bis 6 Teile kaltwasserquellende Stärke,
0,1 bis 0,5 Teile Xanthangummi,
0,1 bis 0,5 Teile Propylenglykolalginat,
0,04 bis 0,52 Teile TiO_2;

(c) Zugeben der trockenen Mischung in das Wasser enthaltende Gefäß unter Rühren zur Herstellung einer fettmimetischen Dispersion;
(d) Zugeben von

8 bis 10 Teilen Essig,
12 bis 27 Teilen Süßungsmittel,
5 bis 25 Teilen Aroma-Cocktail,
0 bis 30 Teilen Öl;
in ein zweites Gefäß, das 21 bis 45 Teile Wasser enthält;

(e) Rühren der Mischung in dem zweiten Gefäß bis zur Homogenität;
(f) Dispergieren von 25 bis 30 Teilen der fettmimetischen Dispersion in der homogenen Mischung in dem zweiten Gefäß.

Revendications

Revendications pour les Etats contractants suivants : AT, BE, CH, DE, DK, ES, GB, GR, LI, NL, SE

1. Une composition de substituant de la matière grasse comprenant un mélange intime de :

30 % - 70 % de cellulose microcristalline colloïdale ;
30 % - 70% d'amidon, de préférence de l'amidon gonflant dans l'eau froide ;
1 % - 15 % de gomme sélectionnée à partir du groupe imposé de la gomme de xanthane, de la gomme de carragheenane, de la gomme de caroube, de la gomme de guar et de mélanges de cela ;
0 % - 5 % d'alginate ou de dérivés d'alginate ;
0 % à 10 %, de préférence 0 % - 15 % d'un opacifiant sélectionné à partir du groupe composé de TiO_2, des solides de lait et de mélanges de cela ;
grâce à quoi le substituant confère des propriétés organoleptiques similaires à celles de la matière grasse lorsqu'il est formulé dans une quantité allant de 1 % à 10 % dans une sauce de salade contenant jusqu'à 30 % de matière grasse ; et dans laquelle le substituant ne comprend pas de blancs d'oeufs.

2. Une composition de substituant de la matière grasse selon la revendication 1, essentiellement composée de :

50 % - 60 % de ladite cellulose colloïdale microcristalline ;
40 % - 50 % dudit amidon, de préférence de l'amidon gonflant dans l'eau froide;
3 % - 5 % de ladite gomme ;
1 % à 3 % d'alginate, dans lequel ledit alginate est de l'alginate de propylène glycol ;
0,5 % à 4 % d'opacifiant, ledit opacifiant étant du TiO_2.

3. Une composition de substituant de la matière grasse selon la revendication 1, composée de :

56 % de ladite cellulose colloïdale microcristalline ;
32 % dudit amidon, de préférence de l'amidon gonflant dans l'eau froide ;
4 % de ladite gomme, ladite gomme étant de la gomme de xanthane ;
5 % dudit alginate, ledit alginate est de l'alginate de propylène glycol ;
3 % dudit opacifiant, ledit opacifiant étant du TiO_2.

4. Une sauce de salade contenant jusqu'à 30 % de matière grasse comprenant :

0,1 à 5 % d'amidon, de préférence 0,1 à 3,0 % de cellulose colloïdale microcristalline ;
0,5 % - 4,5 % d'amidon, de préférence de l'amidon gonflant dans l'eau froide ;
0,1 % - 0,6 % de gomme sélectionnée à partir du groupe composé de la gomme de xanthane, de la gomme de carragheenane, de la gomme de caroube, de la gomme de guar et de mélanges de cela ;
0 % - 0,3 % de dérivés alginates sélectionnés à partir du groupe composé d'alginate de propylène glycol ; d'alginate de sodium ;
0,1 à 1 %, de préférence de 0 % à 0,4 % d'un opacifiant sélectionné à partir du groupe composé de TiO_2, de solides de lait et de mélanges de cela ;
0,1 - 25 % d'un cocktail de parfum essentiellement composé d'extraits d'épices, de parfums naturels ou artificiels ;
0 % à 3,5 % d'agents d'acidité ;
0 % - 30 % d'agent adoucissant ;
0 % - 30 % d'huile ;
15 % - 80 % d'eau ;
dans laquelle ladite sauce de salade ne contient pas de blancs d'oeufs et a substantiellement les mêmes propriétés organoleptiques et fonctionnelles que les autres sauces de salade ayant une teneur plus importante en matières grasses, ladite cellulose microcristalline étant de préférence sous la forme de particules, 70 % de ces particules ayant une taille de particule inférieure à environ 0,2 micromètres.

5. Une sauce de salade selon la revendication 4 ayant :

0,1 % - 2,0 % de ladite cellulose colloïdale microcristalline ;
0,1 % - 4 % dudit amidon, de préférence de l'amidon gonflant dans l'eau froide;
0,1 % - 0,5 % de ladite gomme sélectionnée à partir du groupe composé de la gomme de xanthane, de la gomme de carragheenane, de la gomme de caroube de la gomme de guar et des mélanges de cela ;
0,1 % - 0,2 % desdits dérivés alginates ,sélectionnés à partir du groupe composé de l'alginate de propylène glycol, de l'alginate de sodium ;
0,1 % - 0,3 % dudit TiO_2 ;
5 % - 25 % dudit cocktail de parfum ;

0,5 - 3,5 % dudit agent d'acidité ;
5 % - 25 % dudit agent adoucissant ;
20 % - 70 % d'eau ;
0 % - 15 % d'huile.

6. Une sauce de salade selon, la revendication 4 ayant :

0,8 % - 1,7 % de ladite cellulose colloïdale microcristalline ;
0,8 % - 2,5 % dudit amidon, de préférence de l'amidon gonflant dans l'eau froide ;
0,12 % - 0,16 % de ladite gomme ;
0 % - 0,15 % desdits dérivés alginates ,selectionnés à partir du groupe composé de l'alginate de propylène glycol, de l'alginate de sodium ;
0,1 % - 0,13 % dudit TiO_2 ;
4,5 % - 11,5 % dudit cocktail de parfum ;
0,8 - 1,0 % dudit agent d'acidité, dans lequel ledit agent d'acidité est du vinaigre ;
12 % - 27 % dudit agent adoucissant ;
45 % - 69 % d'eau ;
0 % - 15 % d'huile.

7. Un procédé de préparation d'une sauce de salade à faible teneur en matière grasse comprenant les étapes consistant à :

(a) ajouter une partie de cellulose colloïdale microcristalline à environ 10 à 30 parties d'eau sous agitation et dans un récipient à température ambiante de 60°F à 75°F (15°C - 24°C), tout en poursuivant l'agitation afin de former une dispersion ;

(b) toujours sous agitation, ajouter de 0,1 à 0,2 partie de gomme de xanthane à la dispersion ;

(c) toujours sous agitation, ajouter les ingrédients ci-dessous dans l'ordre indiqué :

1 - 11 parties de mélasse/sucre à haute teneur en fructose ;
4 - 5 parties de vinaigre distillé,
10 - 11 parties de cocktail de parfum,
0,02 - 0,05 partie de dioxyde de titane,
1 - 2 partie d'amidon gonflant dans l'eau froide,
0,5 - 1,5 partie d'huile de soja,
0,08 - 0,10 partie d'alginate de propylène glycol,
0,5 partie d'amidon alimentaire modifié,
0,003 - 0,004 partie de disodium de calcium,
éthylènediaminetétra-acétate (EDTA),

(d) mélanger de façon continue et agiter le mélange jusqu'à ce qu'il devienne lisse ;

(e) transporter le produit jusqu'à un réservoir puis le mettre en bouteilles.

8. un procédé de préparation d'une sauce de salade comprenant les étapes consistant à :

(a) ajouter 70 à 99 parties d'eau dans un récipient, puis à commencer l'agitation;

(b) préparer un mélange sec coutenant :

0,3 à 5,6 parties de cellulose colloïdale microcristalline,
0,3 à 6 parties d'amidon gonflant dans l'eau froide,
0,1 à 0,5 partie de gomme de xanthane,
0,1 à 0,5 partie d'alginate de propylène glycol,
0,04 à 0,52 partie de TiO_2.

(c) ajouter le mélange sec dans le récipient contenant l'eau tout en poursuivant l'agitation afin de préparer une

dispersion de substituant de la matière grasse ;

(d) dans un deuxième récipient contenant 21 - 24 parties d'eau, ajouter :

8 à 10 parties de vinaigre,
12 à 27 parties d'agent adoucissant,
5 à 25 parties de cocktail de parfum,
0 à 30 parties d'huile;

(e) agiter le mélange dans le second récipient jusqu'à ce qu'il soit homogène ;

(f) disperser 25 à 30 parties du substituant de la matière grasse dans le mélange homogène du deuxième récipient.

Revendications pour les Etats contractants suivants : FR, IT, PT, IE

1. Une composition de substituant de la matière grasse comprenant un mélange intime de :

30 % - 70 % de cellulose microcristalline colloïdale ;
30 % - 70 % d'amidon, de préférence de l'amidon gonflant dans l'eau froide ;
1 % - 15 % de gomme sélectionnée à partir du groupe composé de la gomme de xanthane, de la gomme de carragheenane, de la gomme de caroube, de la gomme de guar et de mélanges de cela ;
0 % - 5 % d'alginate ou de dérivés d'alginate ;
0 % à 10 %, de préférence 0 % - 15 % d'un opacifiant sélectionné à partir du groupe composé de TiO_2, des solides de lait et de mélanges de cela ;
grâce à quoi le substituant confère des propriétés organoleptiques similaires à celles de la matière grasse lorsqu'il est formulé dans une quantité allant de 1 % à 10 % dans une sauce de salade contenant jusqu'à 30 % de matière grasse.

2. Une composition de substituant de la matière grasse selon la revendication 1, essentiellement composée de :

50 % - 60 % de ladite cellulose colloïdale microcristalline ;
40 % - 50 % dudit amidon, de préférence de l'amidon gonflant dans l'eau froide ;
3 % - 5 % de ladite gomme ;
1 % à 3 % d'alginate, dans lequel ledit alginate est de l'alginate de propylène glycol ;
0,5 % à 4 % d'opacifiant, ledit opacifiant étant du TiO_2.

3. Une composition de substituant de la matière grasse selon la revendication 1, composée de :

56 % de ladite cellulose colloïdale microcristalline ;
32 % dudit amidon, de préférence de l'amidon gonflant dans l'eau froide ;
4 % de ladite gomme, ladite gomme étant de la gomme de xanthane ;
5 % dudit alginate, ledit alginate est de l'alginate de propylène glycol ;
3 % dudit opacifiant, ledit opacifiant étant du TiO_2.

4. Une sauce de salade contenant jusqu'à 30 % de matière grasse, comprenant :

0,1 à 5 , de préférence 0,1 à 3,0 % de cellulose colloïdale microcristalline ;
0,5 % - 4,5 % d'amidon, de préférence de l'amidon gonflant dans l'eau froide ;
0,1 % - 0,6 % de gomme sélectionnée à partir du groupe composé de la gomme de xanthane, de la gomme de carragheenane, de la gomme de caroube, de la gomme de guar et de mélanges de cela ;
0 % - 0,3 % de dérivés alginates sélectionnés à partir du groupe composé d'alginate de propylène glycol ; d'alginate de sodium ;
0,1 à 1 %, de préférence de 0 % à 0,4 % d'un opacifiant sélectionné à partir du groupe composé de TiO_2, de solides de lait et de mélanges de cela ;
0,1 - 25 % d'un cocktail de parfum essentiellement composé d'extraits d'épices, de parfums naturels ou artificiels ;
0 % à 3,5 % d'agents d'acidité ;

0 % - 30 % d'agent adoucissant ;
0 % - 30 % d'huile ;
15 % - 80 % d'eau ;
ladite sauce de salade ayant substantiellement les mêmes propriétés organoleptiques et fonctionnelles que les autres sauces de salade ayant une teneur plus importante en matières grasses, ladite cellulose microcristalline étant de préférence sous la forme de particules, 70 % de ces particules ayant une taille de particule inférieure à environ 0,2 micromètres.

5. Une sauce de salade selon la revendication 4 ayant :

0,1 % - 2,0 % de ladite cellulose colloïdale microcristalline ;
0,1 % - 4 % dudit amidon, de préférence de l'amidon gonflant dans l'eau froide;
0,1 % - 0,5 % de ladite gomme sélectionnée à partir du groupe composé de la gomme de xanthane, de la gomme de carragheenane, de la gomme de caroube de la gomme de guar et des mélanges de cela ;
0,1 % - 0,2 % desdits dérivés alginates ,sélectionnés à partir du groupe composé de l'alginate de propylène glycol, de l'alginate de sodium ;
0,1 % - 0,3 % dudit TiO_2 ;
5 % - 25 % dudit cocktail de parfum ;
0,5 - 3,5 % dudit agent d'acidité ;
5 % - 25 % dudit agent adoucissant ;
20 % - 70 % d'eau ;
0 % - 15 % d'huile.

6. Une sauce de salade selon, la revendication 4, ayant :

0,8 % - 1,7 % de ladite cellulose colloïdale microcristalline ;
0,8 % - 2,5 % dudit amidon, de préférence de l'amidon gonflant dans l'eau froide ;
0,12 % - 0,16 % de ladite gomme ;
0 % - 0,15 % desdits dérivés alginates ,sélectionnés à partir du groupe composé de l'alginate de propylène glycol, de l'alginate de sodium ;
0,1 % - 0,13 % dudit TiO_2 ;
4,5 % - 11,5 % dudit cocktail de parfum ;
0,8 - 1,0 % dudit agent d'acidité, dans lequel ledit agent d'acidité est du vinaigre ;
12 % - 27 % dudit agent adoucissant ;
45 % - 69 % d'eau ;
0 % - 15 % d'huile.

7. Un procédé de préparation d'une sauce de salade à faible teneur en matière grasse comprenant les étapes consistant à :

(a) ajouter une partie de cellulose colloïdale microcristalline à environ 10 à 30 parties d'eau sous agitation et dans un récipient à température ambiante de 60°F à 75°F (15°C - 24°C), tout en poursuivant l'agitation afin de former une dispersion ;

(b) toujours sous agitation, ajouter de 0,1 à 0,2 partie de gomme de xanthane à la dispersion ;

(c) toujours sous agitation, ajouter les ingrédients ci-dessous dans l'ordre indiqué :

1 - 11 parties de mélasse/sucre à haute teneur en fructose ;
4 - 5 parties de vinaigre distillé,
10 - 11 parties de cocktail de parfum,
0,02 - 0,05 partie de dioxyde de titane,
1 - 2 partie d'amidon gonflant dans l'eau froide,
0,5 - 1,5 partie d'huile de soja,
0,08 - 0,10 partie d'alginate de propylène glycol,
0,5 partie d'amidon alimentaire modifié,
0,003 - 0,004 partie de disodium de calcium,
éthylènediaminetétra-acétate (EDTA),

(d) mélanger de façon continue et agiter le mélange jusqu'à ce qu'il devienne lisse ;

(e) transporter le produit jusqu'à un réservoir puis le mettre en bouteilles.

8. un procédé de préparation d'une sauce de salade comprenant les étapes consistant à :

(a) ajouter 70 à 99 parties d'eau dans un récipient, puis à commencer l'agitation ;

(b) préparer un mélange sec contenant :

0,3 à 5,6 parties de cellulose colloïdale microcristalline,
0,3 à 6 parties d'amidon gonflant dans l'eau froide,
0,1 à 0,5 partie de gomme de xanthane,
0,1 à 0,5 partie d'alginate de propylène glycol,
0,04 à 0,52 partie de TiO_2.

(c) ajouter le mélange sec dans le récipient contenant l'eau tout en poursuivant l'agitation afin de préparer une dispersion de substituant de la matière grasse ;

(d) dans un deuxième récipient contenant 21 - 24 parties d'eau, ajouter :

8 à 10 parties de vinaigre,
12 à 27 parties d'agent adoucissant,
5 à 25 parties de cocktail de parfum,
0 à 30 parties d'huile;

(e) agiter le mélange dans le second récipient jusqu'à ce qu'il soit homogène ;

(f) disperser 25 à 30 parties du substituant de la matière grasse dans le mélange homogène du deuxième récipient.

(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 955 246 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
02.01.2003 Bulletin 2003/01

(51) Int Cl.[7]: **B65D 81/34**, A23L 1/48

(21) Application number: **99200763.3**

(22) Date of filing: **13.03.1999**

(54) **Pouch meal**

Speise im Beutel

Repas en sachet

(84) Designated Contracting States:
AT BE CH DE DK ES FI FR GB GR IE IT LI LU NL PT SE

(30) Priority: **08.05.1998 GB 9809919**

(43) Date of publication of application:
10.11.1999 Bulletin 1999/45

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EP 0 955 246 B1

Printed by Jouve, 75001 PARIS (FR)

Description

[0001] The present invention relates to a frozen food product in a steamable pouch. The invention also relates to a method of preparing the frozen food product.

[0002] It is known to boil rice or pasta in net pouches. The pouch with the rice or pasta is immersed into boiling water and after the end of the cooking time the pouch is lifted out of the water. The pouch then acts as its own colander by self-draining the water from the rice or pasta.

[0003] This kind of pouch is not used for other types of food because cooking a food product such as vegetables or fish directly in water can result in loss of vitamins and colour, uptake of water resulting in a change in structure of the product and the taste.

[0004] It is also known to prepare meals in a boil-in-bag. However, for such meals the pouch is a closed pouch preventing contact between the food product and the water and the possible loss of vitamins and colour, uptake of water resulting in a change in structure of the product and the taste. Furthermore, boil-in-bag meals are often prepared cooked dishes in sauce that makes them unsuitable for being put directly into water without any protective package.

[0005] Preparing food products in a pouch is generally desirable as the food product can be hygienically handled without direct contact with the product and because the preparing normally reduces cleaning of cooking utensils.

[0006] The invention aims to provide a high quality hot meal preserving vitamins, flavour, colour, taste of the ingredients. A further aim is that such a meal can be prepared in a hygienic and convenient manner which and which requires as little as possible involvement by the consumer during its preparation. The invention also aims to provide a meal which is suitable for catering or restaurant outlets.

[0007] Accordingly, in a first aspect, the invention relates to a frozen food product in a steamable pack comprising

(i) frozen food pieces containing at least two different types of food, and
(ii) a pouch containing the frozen food pieces, the pouch comprising a mesh, the mesh allowing steam to escape during heating but maintaining a steam environment in the pouch.

[0008] It has been found that by heating the pouch in a microwave oven, although the pouch comprises a mesh or is made up by a mesh, it is possible to generate a steam environment in the pouch even though steam is allowed to escape. It has also been found that steam which condenses on the inside of the package and that moisture generated from the heating of the food pieces are retained in the pouch. When heating the frozen product in the pouch in the microwave oven, the food pieces are steamed and a crispy product may be obtained which has a high level of vitamin and a well-preserved colour.

[0009] The quality of the product which can be obtained when heating the pouch product according to the invention is different from the quality obtained had the product been prepared in a roasting bag in a microwave oven. A roasting bag is an impervious bag which normally is give a few perforations to prevent it from exploding when the product is heated. The roasting bag provides a pressure cooking and braising of the product. The tast of the product prepared in a roasting bag is therefore different due to the cooking, boiling and braising of the ingredients together. The product heated in a mesh pouch will be steamed not boiled in a moist environment.

[0010] The frozen food product comprises at least two types of frozen food pieces such as individually frozen pieces. As the frozen product can comprise a number of different food pieces a complete meal can be composed.

[0011] It has surprisingly been found that a meal with a sauce or liquid seasoning may also be prepared in a mesh pouch in accordance with the invention. The frozen food pieces and sauce or liquid seasoning may be packed together in the pouch of the invention. When heating the pouch in a microwave oven, it has been found that the sauce or liquid seasoning will substantially remain in the pouch. The pouch mesh of the invention may retain liquid having a viscosity in the range from 1 to 20 Bostwick Centigrades (test conditions: 50 ml sauce or liquid seasoning, 20°C, 30 sec flow time). Preferred mesh materials for this purpose are given below.

[0012] The food pieces may be coated with the sauce or liquid seasoning. It may e.g. be sprayed onto the food pieces.. Alternatively, the sauce or liquid seasoning may be included in the pouch in the form of frozen pellets.

[0013] It has been found that by utilising a mesh material having 80 to 100 holes per cm2 the above discussed steaming of the food pieces may be obtained and sauce or liquid seasoning retained in the pouch. It is preferred that the mesh has a hole size of less than 500 micron. Particularly advantageously the hole size is from 425 to 475 micron. A perferred hole size is 450 micron. The pouch may be partly made from the mesh or the mesh may be used for the whole pouch.

[0014] Suitable materials for the mesh are a material, which is substantially transparent to microwave, and which can withstand heating of the product. The mesh is preferably of plastics such as polyethylene, polypropylene, or polyester etc.. More preferably, the mesh is of HDPE (high-density polyethylene). The mesh advantageously has a thickness of below 200 micron, more preferably below 100 micron.

[0015] The food pieces may be selected from the group consisting of individually frozen predominantly carbohydrate ingredients, individually frozen predominantly vegetable ingredients, and individually frozen

predominantly meat based ingredients or a combination thereof.

[0016] In the present context, the group of individually frozen predominantly meat based ingredients comprise e.g. meat, poultry, fish meat, seafood or other types of meat. The size of the ingredients ranges from 1 to 50 grams, preferably from 1 to 20 grams. The size of the ingredients determine the preparation time required. Therefore, it is desirable to have smaller pieces.

[0017] The group of individually frozen predominantly carbohydrate ingredients preferably comprises ingredients such as rice, pasta, potato etc.

[0018] The group of individually frozen predominantly vegetable ingredient preferably comprises carrot, peas, peppers, beans, wheat corns. Conveniently, the vegetables are blanched, for example to increase the food safety.

[0019] The food pieces may be whole or cut into smaller portions. For example, the meal may comprise whole potatoes.

[0020] The ingredients may be pre-cooked or edible upon thawing. For ingredients, which require little cooking, such as fish meat or seafood, it may not be necessary to pre-cook.

[0021] The invention has been shown particularly useful for the preparation of meals of fish or seafood. For example fish and/or seafood and vegetables have been successfully prepared. The meal may be prepared with or without sauce or liquid seasoning.

[0022] In the present context a liquid seasoning is e. g. a liquid medium comprising seasoning and fat. For example, the liquid seasoning comprises water, herbs or spices, starch and oil.

In the present context a sauce is e.g. selected from the group consisting of cheese sauce and béchamel sauce with or without milk, tomato sauce and vegetable sauce, or a combination thereof. The sauce may or may not comprise pieces of meat, fish or vegetables etc. Other sauces are sauces based on meat or fish stock or gravy.

[0023] The sauce or liquid seasoning preferable has a viscosity of from 1 to 20 Bostwick Centigrades (test conditions, 50 ml sauce or liquid seasoning, 20°C, 30 sec flow time).

[0024] The sauce or liquid seasoning has a water content from 75 to 98% by weight, preferably from 75 to 95 %, advantageously about 90 % wt. It is preferred that the sauce constitutes from 5 to 15% of the total weight of the meal.

[0025] If the sauce or liquid seasoning is in pellet form, the pellets are preferably being from 1 to 10 grams.

[0026] The fact that the ingredients are individually frozen makes it possible to make an on-line variation of the composition of the meal.

[0027] In another aspect, the invention relates to a method of preparing a frozen food product in a steamable pack as discussed above wherein the steamable package is heated in a microwave oven.

[0028] In a further aspect, the invention relates to a method of preparing a frozen food product in a steamable pack as discussed above wherein the steamable pack is heated in a steam cooker. This method of preparing may have the advantage over introducing the meal in a conventional steam cooker. Whereas in a conventional steam cooker all steam and moisture which results form the heating of the product will evaporate or drip from the product, when the product is heated in accordance with the invention moisture from the product and any sauce which may have been applied to it is retained in the pouch while steam is allowed to escape through the mesh. Furthermore, sauce or liquid seasoning may be used.

[0029] The considerations regarding preferred composition of the meal discussed above, is also applicable to the method of the invention. Preferred preparation conditions will be discussed in the examples.

[0030] The invention will now be described in further details with reference to the drawings and examples, by example only, in which,

Fig. 1 shows a photo of a frozen meal in a pouch with a mesh in accordance with the invention, and Fig. 2 shows a photo of a meal of Fig. 1 prepared.

[0031] The meals are prepared from the following :

Mixed vegetables	100- 325 g
Shrimps - Chicken - Fish	35 - 100 g
Pasta - Rice	50 - 150 g
spice liquid	10 - 35 g
Total weight about	350 g

Liquid seasoning:	
vegetable oil	0- 15 g
boullion/stock	5- 15 g
modified starch	2 - 4 g
water	15- 20 g
salt, herbs and spices	1 - 3 g
Total weight	10 - 35 g

[0032] A frozen meal made of food pieces as indicated above is shown in Figure 1.

[0033] Cooking tests are performed in a Microwave oven (700W). A desirable minimum temperature of the meal ingredients is about 75 °C. The meals are heated until the coldest spot reaches this temperature.

[0034] The pouch is placed in the Microwave oven and heating for 4 to 5 minutes. The pouch is inspected through a window in the microwave oven and steam escape from the pouch through the mesh while the cooking takes place. A slight lifting of the pouch material takes place but it is not blown up. The pouch is removed from the microwave oven and the content arrange on a plate, see Figure 2. The product is evaluated and the ingredi-

ents found fresh in colour having a pleasant crisp texture and a complete dish giving an impression of freshness and healthy eating. An amount of juice or sauce occur all depending of amount of added spice liquid.

[0035] The pouch prevents the products from dehydration and sauce or liquid seasoning or juice from the product evaporation during reconstitution in Microwave oven.

Claims

1. A frozen food product in a steamable pack comprising

   (i) frozen food pieces containing at least two different types of food, and
   (ii) a pouch containing the frozen food pieces, the pouch comprising a mesh, the mesh allowing steam to escape during heating but maintaining a steam environment in the pouch.

2. A frozen food product according to claim 1, wherein the mesh retains liquid having a viscosity of in the range from 1 to 20 Bostwick Centigrades.

3. A frozen product according to either claim 1 or 2, wherein the pouch comprises frozen pellets of sauce or liquid seasoning.

4. A frozen product according to either claim 1 or 2, wherein the food pieces are coated in sauce or liquid seasoning.

5. A frozen product according to either of claim 1 or 4, wherein the mesh has 80 to 100 holes per cm2.

6. A frozen product according to any of claims 1 to 5, wherein the mesh has a hole size of less than 500 micron.

7. A frozen product according to any of claims 1 to 6, wherein the hole size is from 425 to 475 micron.

8. A frozen product according to any of claims 1 to 7, wherein the pouch is made of the mesh.

9. A frozen product according to any of claims 1 to 8, wherein the types of food are selected from the group consisting of individually frozen predominantly carbohydrate ingredients, individually frozen predominantly vegetable ingredients, and individually frozen predominantly meat based ingredients or a combination thereof.

10. A frozen product according to any of claims 1 to 9, wherein the food pieces comprises fish and/or seafood and vegetables.

11. A method of preparing a frozen food product according to any of the proceeding claims, wherein the steamable package is heated in a microwave oven.

12. A method of preparing a frozen food product according to any of the proceeding claims, wherein the steamable package is heated in a steam cooker.

Patentansprüche

1. Gefrorenes Lebensmittelprodukt in einer dämpfbaren Packung mit

   (i) gefrorenen Lebensmittelstücken, die zumindest zwei unterschiedliche Arten von Lebensmitteln enthalten, und

   (ii) einem Beutel, der die gefrorenen Lebensmittelstücke enthält, wobei der Beutel ein Gitter umfaßt, wobei es das Gitter zuläßt, daß Dampf während des Erwärmens entweicht, aber eine Dampfumgebung in dem Beutel aufrechterhält.

2. Gefrorenes Lebensmittelprodukt nach Anspruch 1, bei dem das Gitter Flüssigkeit mit einer Viskosität in dem Bereich zwischen 1 bis 20 Bostwick Centigrad zurückhält.

3. Gefrorenes Produkt nach Anspruch 1 oder 2, bei dem der Beutel gefrorene Tabletten aus Soße oder würziger Flüssigkeit umfaßt.

4. Gefrorenes Produkt nach Anspruch 1 oder 2, bei dem die Lebensmittelstücke mit Soße oder würziger Flüssigkeit beschichtet sind.

5. Gefrorenes Produkt nach Anspruch 1 oder 4, bei dem das Gitter 80 bis 100 Löcher pro cm^2 aufweist.

6. Gefrorenes Produkt nach einem der Ansprüche 1 bis 5, bei dem das Gitter eine Lochgröße von weniger als 500 Mikrometer aufweist.

7. Gefrorenes Produkt nach einem der Ansprüche 1 bis 6, bei dem die Lochgröße zwischen 425 bis 475 Mikrometern liegt.

8. Gefrorenes Produkt nach einem der Ansprüche 1 bis 7, bei dem der Beutel aus dem Gitter gemacht ist.

9. Gefrorenes Produkt nach einem der Ansprüche 1 bis 8, bei dem die Lebensmittelarten aus der Gruppe ausgewählt sind, die aus einzeln gefrorenen Zutaten mit überwiegend Kohlenhydraten, einzeln gefrorenen Zutaten mit überwiegend Gemüse, und einzeln gefrorenen Zutaten überwiegend auf

Fleischbasis oder einer Kombination davon besteht.

10. Gefrorenes Produkt nach einem der Ansprüche 1 bis 9, bei dem die Lebensmittelstücke Fisch und/oder Meeresfrüchte und Gemüse umfassen.

11. Verfahren zum Zubereiten eines gefrorenen Lebensmittelprodukts nach einem der vorhergehenden Ansprüche, bei dem die dämpfbare Verpakkung in einem Mikrowellenherd erwärmt wird.

12. Verfahren zum Zubereiten eines gefrorenen Lebensmittelprodukts nach einem der vorhergehenden Ansprüche, bei dem die dämpfbare Verpakkung in einem Dampfkochgerät erwärmt wird.

Revendications

1. Produit alimentaire congelé dans un emballage apte à la cuisson à la vapeur, comprenant :

(i) des morceaux d'aliments congelés contenant au moins deux types différents d'aliments, et
(ii) un sachet contenant les morceaux d'aliments congelés, le sachet comprenant des mailles, les mailles permettant à la vapeur d'eau de s'échapper au cours du chauffage mais maintenant un environnement de vapeur d'eau dans le sachet.

2. Produit alimentaire congelé suivant la revendication 1, dans lequel les mailles retiennent un liquide ayant une viscosité comprise dans l'intervalle de 1 à 20 centigrades Bostwick.

3. Produit congelé suivant la revendication 1 ou 2, dans lequel le sachet comprend des granulés congelés de sauce ou d'assaisonnement liquide.

4. Produit congelé suivant la revendication 1 ou 2, dans lequel les morceaux d'aliments sont enrobés dans une sauce ou un assaisonnement liquide.

5. Produit congelé suivant la revendication 1 ou 4, dans lequel les mailles comportent 80 à 100 trous par cm^2.

6. Produit congelé suivant l'une quelconque des revendications 1 à 5, dans lequel les mailles ont un diamètre de trou inférieur à 500 micromètres.

7. Produit congelé suivant l'une quelconque des revendications 1 à 6, dans lequel le diamètre de trou est compris dans l'intervalle de 425 à 475 micromètres.

8. Produit congelé suivant l'une quelconque des revendications 1 à 7, dans lequel le sachet est constitué des mailles.

9. Produit congelé suivant l'une quelconque des revendications 1 à 8, dans lequel les types d'aliments sont choisis dans le groupe consistant en des ingrédients principalement glucidiques congelés individuellement, des ingrédients consistant principalement en légumes congélés individuellement et des ingrédients principalement à base de viande congelés individuellement ou une de leurs associations.

10. Produit congelé suivant l'une quelconque des revendications 1 à 9, dans lequel les morceaux d'aliments comprennent le poisson et/ou des crustacés et des légumes.

11. Procédé pour la préparation d'un produit alimentaire congelé suivant l'une quelconque des revendications précédentes, dans lequel l'emballage apte à la cuisson à la vapeur est chauffé dans un four à micro-ondes.

12. Procédé pour la préparation d'un produit alimentaire congelé suivant l'une quelconque des revendications précédentes, dans lequel l'emballage apte à la cuisson à la vapeur est chauffé dans un cuiseur à vapeur.

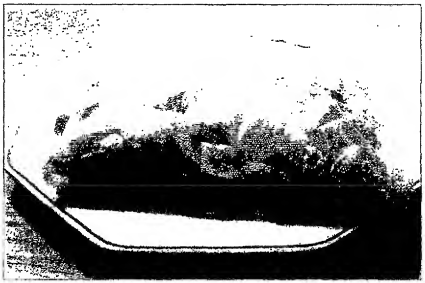

FIG.1

FIG.2